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MERRELL-SOULE PRODUCTS

In the Bakery

MERRELL-SOULE PRODUCTS

In The Bakery

MERRELL-SOULE COMPANY
General Offices
SYRACUSE, NEW YORK

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Syracuse, N. Y.

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PAGE

What is Merrell-Soule Powdered Milk? 5
A Tribute to Merrell-Soule Powdered Milk, by Prof. O. F. Hunziker . 6
Development of the Ideal Method of Milk Preservation . . . 7
The Merrell-Soule Spray Process 8
A Trip Through a Merrell-Soule Powdered Milk Factory . . . 10

Merrell-Soule Milk Products:
- Powdered Skimmed Milk 12
- Butterfat Powders 13
- "Cream Powders" 13
- Powdered Buttermilk 14

Merrell-Soule Powdered Milk Products in the Baking Industry . 16
Bakers' Technical Service Department 16
General Baking and Cooking Uses 17
Advantages of Merrell-Soule Powdered Milk for Baking . . . 18
Directions for Restoring Powdered Milk for Bakery Use . . . 19
Powdered vs. Liquid Milk—Quality, Cost, Yield 20
In Yeast-Raised Baked Goods 21
Sweet Yeast Dough Goods 29
Powdered Buttermilk—Uses and Value in Baking 32
Rope, Its Formation and Habits 36
Methods of Elimination 37
Use of Merrell-Soule Milk Products in Cake Baking 38
In Pie Baking—Pie Crust, Pie Filling and Soft Pies 48
Simple Tests for the Buyer of Powdered Milk 57
- Sediment 58
- Moisture 59
- Flavor 61
- Bacteria 61
- Butterfat 62
- Albumen 63

Comparative Analyses 64
Federal Standards 64
Bakers' Brick Mince Meat 65
Confectioners' Mince 65
How Bakers' Brick Mince Meat is Made 65
Uses of Bakers' Brick Mince Meat in the Bakery 67
Confectioners' Mince in the Bakery 69
At Your Service 74

What Is Merrell-Soule Powdered Milk?

IT is rich, pure milk, reduced to powder by a process in which no vital or nutritive quality of the milk is affected.

It is a form of milk in which bacteria cannot propagate.

It is the cleanest and purest form in which milk can be packed, shipped and stored.

It is milk whose transportation cost has been reduced seven-eighths (liquid milk is seven-eighths water).

It is the most convenient, most economical preparation of milk, for baking, candy-making, ice-cream manufacture, and all dairy and creamery purposes.

It is a veritable boon to hotels, restaurants, clubs, steamships, settlement houses, etc., needing only to be mixed with water in order to produce an instant, pure and palatable supply of milk for drinking or cooking.

It is a product which holds within itself and its development the brightest possibilities, greatest growth and most assured success of the milk industry, and every industry dependent on milk.

"The product of the Merrell and Gere process is without question superior to any milk powder manufactured by the various processes herein mentioned. It embodies the three all important characteristics of a desirable and successful milk powder; namely, it contains less than the minimum amount of moisture which permits of bacterial action, its butterfat is retained in the globular form and does therefore mix with water readily, forming a complete emulsion, and its albumen is present in its natural non-coagulated and soluble form, ensuring complete solubility of this dried milk in water."—From "Condensed Milk and Milk Powders," by O. F. Hunziker, B.S.A.,M.S.A., Professor of Dairy Husbandry, Purdue University, and Chief of the Dairy Department of the Indiana Agricultural Experiment Station, Lafayette, Ind.

Development of the Ideal Method of Milk Preservation

ONE thing above all others has been sought in the milk industry—to find a process of preservation by which milk could be put away when it was plentiful and released for consumption in the seasons when there was a shortage; a method by which milk could be transported great distances, to any climate, in any season, at minimum transportation cost, and stored without deterioration for long periods of time.

The desired process must, it was evident, be one which would not affect the active principles or the nutritive qualities of milk, nor change its chemical reactions in any way. The product when reaching the consumer must be, in every essential quality, Fresh Milk.

The methods known as condensation and evaporation, also the earlier milk powder processes, were efforts to achieve the desired result. But in none of them was the goal completely attained, as it is to-day in Merrell-Soule Powdered Milk—the product of a perfected process.

Liquid Milk is seven-eighths water. Merrell-Soule Powdered Milk contains approximately 2 per cent. of moisture. Transportation cost is thus reduced to a very small percentage of the expense of shipping liquid milk. The fact that powdered milk may be shipped by freight, while liquid milk must go by express or baggage, means an additional saving.

The expense of shipping powdered milk is also, of course, much lower than the transportation cost of the condensed product.

The Merrell-Soule process reduces the bacteria count to a remarkably low figure, and it is a demonstrated fact that the bacteria which are to be found in the fresh-made powder tend to decrease, rather than propagate, during storage.

Merrell-Soule Powdered Milk is quickly and easily dissolved in water, and the "reconstituted" liquid milk thus obtained is pure, fresh milk, with the delicate odor and unmistakable flavor of fresh milk, and with every chemical reaction and nutritive property of fresh milk retained unchanged.

Merrell-Soule Spray Process

Its History and Development

THE history of Powdered Milk dates back to the middle of the last century, when an inventor named Grimwade patented, in England, the first commercially usable process.

He added carbonate of soda to fresh milk, evaporated it in open-jacketed pans, with constant agitation, until a dough-like substance resulted; added cane sugar, pressed the mixture between rollers into ribbons, dried it still further, then pulverized it.

This process, cumbersome and unsatisfactory as it must have been, was in practice for some years. Other processes followed at intervals for half a century, but the real commercial development of the industry dates back only about twenty years.

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It was in 1899 that a machine for the drying of milk by what has since become known as the "double roll" process was invented by W. B. Gere, since deceased, then secretary of Merrell-Soule Co., and I. S. Merrell, first vice-president of the company. But the "dry milk" which resulted from this process was not satisfactory, and for that reason was not put on the market by Merrell-Soule Company.

Several other processes were then tried out, but none proved satisfactory until Lewis C. Merrell, brother of I. S. Merrell, hit upon the spraying of milk into a regulated current of heated air. This gave the quality that had been desired, and the next thing was to determine the commercial value of the process.

In January, 1905, a building owned by Merrell-Soule Company at Fayetteville, N. Y., was equipped, and powdered milk was produced, in a small way, by this spray process. Enough was marketed, and with sufficiently gratifying results, to warrant the company in going ahead with the enterprise.

* * * * * * * * * * *

Meantime, patents had been applied for, and the patent office had referred Merrell-Soule Company to a United States patent granted in

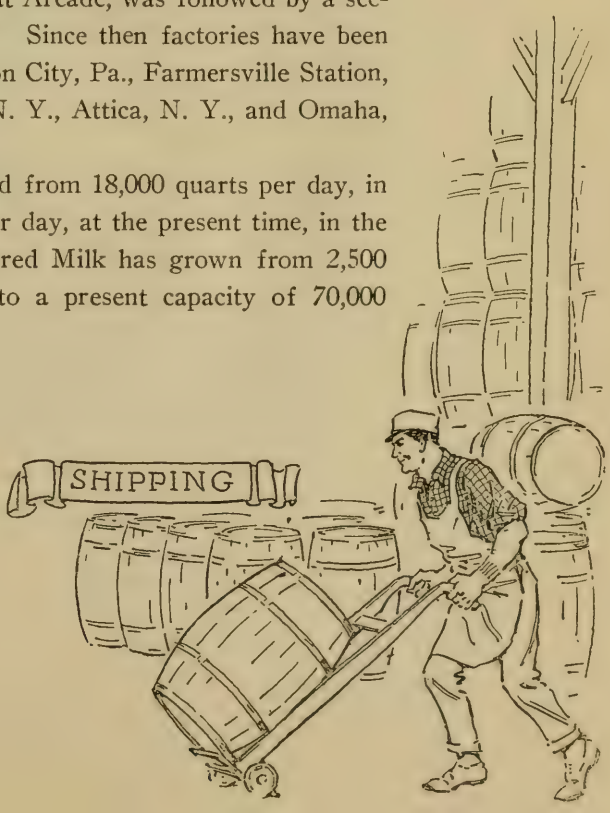
1901 to Robert Stauf, of Posen, Germany, which seemed to cover the process. F. C. Soule, president of Merrell-Soule Company, thereupon went to Germany and bought not only the United States patent held by Stauf, but also thirteen foreign patents owned by Stauf and his associates.

The wisdom of the purchase of all the patents held by the Stauf interests has since been amply demonstrated. In 1915, patent litigation which had been in the courts for three years was decided by the Court of Appeals in favor of Merrell-Soule Company, the decision being based on this company's possession of the basic patents governing the spray process of powdered milk manufacture.

Following the success of the experiment at Fayetteville, the construction of the first Merrell-Soule Powdered Milk factory, at Arcade, N. Y., was begun in 1906. Before this factory was completed, it had been discovered that a better product could be obtained by condensing the milk in a vacuum pan before spraying. This resulted in new patents covering what was known as the Merrell-Gere process, embodying the original Stauf method and the improvement mentioned. Since then many other improvements have been made at the Merrell-Soule plants and many other patents taken out.

The first powdered milk factory, at Arcade, was followed by a second, at Little Valley, N. Y., in 1909. Since then factories have been established at Frewsburg, N. Y., Union City, Pa., Farmersville Station, N. Y., Warsaw, N. Y., Gainesville, N. Y., Attica, N. Y., and Omaha, Neb.

Consumption of milk has increased from 18,000 quarts per day, in 1906, at Arcade, to 400,000 quarts per day, at the present time, in the ten factories. The output of Powdered Milk has grown from 2,500 pounds per day, twelve years ago, to a present capacity of 70,000 pounds per day.



A Trip Through a Merrell-Soule Powdered Milk Factory

PICTURE to yourself a large, light, clean room, with a wide doorway at one side where cans of milk—fresh, cold and sweet—are being unloaded from big drays, in almost unending succession.

There you will have the first step in the manufacture of Merrell-Soule Powdered Milk. This first step includes more, however, than the mere collecting of the cans of milk from the farmers, and their transportation to the testing and weighing room. Every farm which sends milk to a Merrell-Soule factory is visited, as often as may be necessary, by a Merrell-Soule inspector, whose business it is to see that strictly sanitary conditions are maintained by the farmer.

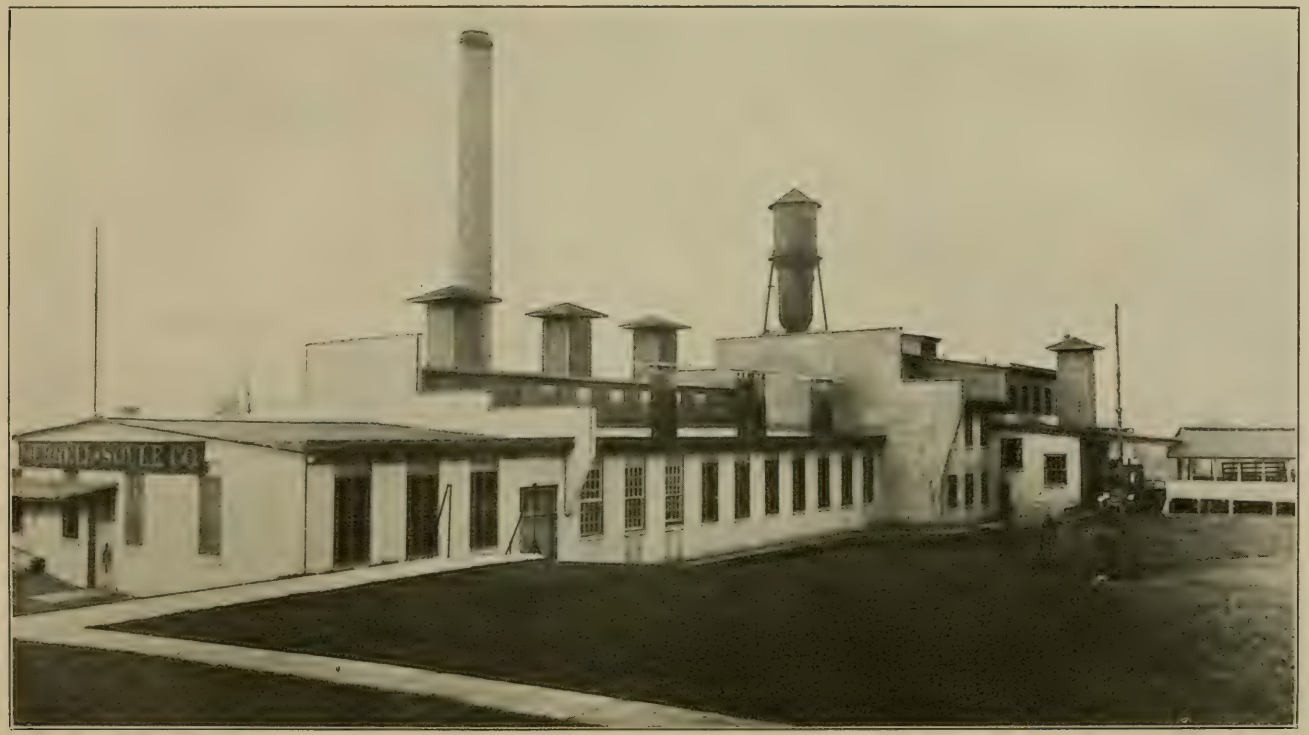
* * * * * * * * * * *

Unloaded at the factory, each can of milk passes first to a man who removes the cover and lifts it to his face, so as to catch the odor which has risen from the milk into the cover. Just a whiff is sufficient for this expert. If the odor indicates any condition which he knows should not be present in fresh, sweet milk, that can is set aside. Not only is it rejected, but an investigation is made, to ascertain the cause of its condition, and steps are at once taken to correct wrong conditions at the farm from which it came.

Not often does this occur, because of the vigilant inspection at all farms. Most of the cans, passing rapidly on an automatic conveyor before the expert tester, are accepted, the milk is weighed and emptied into receiving tanks.

Next comes the "skimming" of the milk—the removal of the butter-fat—by a separator. The cream which is removed is pasteurized and placed in cans to be marketed. The skimmed milk is also pasteurized, then it goes to a vacuum pan, where part of the water it contains is removed by condensation, at a temperature which does not coagulate the albumen nor affect any vital principle of the milk.

Now comes the operation which is both most interesting to watch and most important in making Merrell-Soule Powdered Milk absolutely



Powdering Plant, Union City, Pa. Capacity 125,000 Pounds Daily

Merrell-Soule Powdered Milk Factory, Little Valley, N. Y.

different from, and superior to, powdered milk made by any other process. This is the spraying process, covered by the Merrell-Soule patents.

In this process the partly condensed milk is sprayed through tiny holes in metal discs into a current of warm air. The moisture in the milk is instantly absorbed by the heated air, the remaining solid portion separates into minute particles and falls like the finest, drifting snow to the floor of the chamber in which this process takes place.

These tiny particles, closely massed as the finest flour, constitute the finished product—Merrell-Soule Powdered Milk.

Gathered up, after it has fallen to a depth of several inches, the milk powder is ready for packing.

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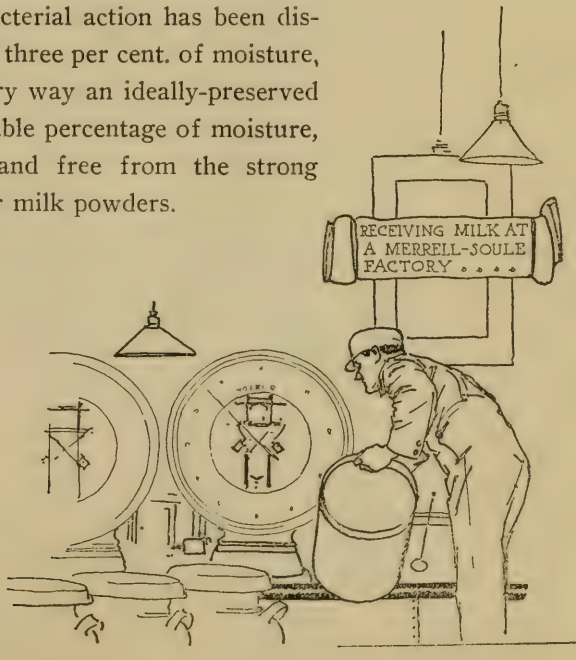
It is an important as well as a noteworthy fact that no chemical change is produced in the milk by the spraying process. There is no super-heating of the milk particles when they are blown into the current of hot air. Instead, the instant evaporation has a cooling effect—the process not only takes heat from the air, but also from the interior of the particles, so that the milk solids become cooler and cooler until perfectly dry.

It is not necessary to neutralize the acidity of the milk, for the moisture is removed so quickly that neither the albumen nor the casein is affected in any way by the concentration of the acid.

The powdered milk, in frequent tests, has been found to contain less than two per cent. of moisture—and no bacterial action has been discovered in milk powder containing less than three per cent. of moisture,

Merrell-Soule Powdered Milk is in every way an ideally-preserved milk—soluble, containing the lowest obtainable percentage of moisture, offering no breeding place for bacteria, and free from the strong "cooked flavor" so noticeable in many other milk powders.



Merrell-Soule Milk Products

THERE is a Merrell-Soule Powdered Milk product for every need that can be met by liquid milk or cream, condensed or evaporated milk, or buttermilk.

These products include Powdered Skimmed Milk, Butterfat Powders, of varying butterfat content, "Cream Powders," which contain up to 72 per cent. butterfat, and Powdered Buttermilk.

Merrell-Soule Powdered Skimmed Milk may truthfully be said to afford the closest approach to an ideally preserved milk that can be found.

Powdered Skimmed Milk

It is pure, fresh skimmed milk, reduced to powder form by the Merrell-Soule Spray Process. It will keep almost indefinitely, in cool, dry storage, and when it is "reconstituted" into liquid milk, by the simple process of dissolving it in water, the resultant beverage will be found as fresh and palatable as new milk from the cow. Decomposition having been prevented solely by dryness, and without changing the chemical composition of the milk, it can be demonstrated that no essential property of the fresh skimmed milk has been diminished or altered.

Merrell-Soule Powdered Skimmed Milk is used in dairies and creameries for standardizing milk, for making butter "starter," for the manufacture of liquid milk, cream and buttermilk. Ice cream makers use it for standardizing milk, for making liquid milk and cream, and for "milk solids."

The baker uses it in bread, cakes, custards, creams, piecrust—in any way that he would employ liquid milk. Confectioners find that it surpasses any other form of skimmed milk for the making of delicious, delicately-flavored caramels, milk coatings and fudges.

Hotels, clubs, steamships, restaurants, by using Merrell-Soule Powdered Skimmed Milk, avoid the annoyances of shortage, delivery troubles, souring. Fresh, pure liquid skimmed milk can be made up, in

any desired quantity, whenever needed, for drinking, cooking, or the making of ice cream.

Milk stations, by having Merrell-Soule Powdered Skimmed Milk on hand, are enabled to meet unexpected demands, and to take care of shortages. Condensaries are using Powdered Skimmed Milk in the manufacture of "Superheated Condensed" for the dairy trade.

Butterfat Powders

Merrell-Soule Butterfat Powders are made from milk which contains varying amounts of natural butterfat content.

For instance, No. 14 Butterfat Powder has as a base a "half-skimmed" milk, containing approximately 1.6 to 1.8 per cent. of butterfat. It is used for Prepared Cocoa, in Milk Chocolate, for confectionery, in biscuit, crackers and other bakery goods, and for the making of a rich grade of Lactated Buttermilk.

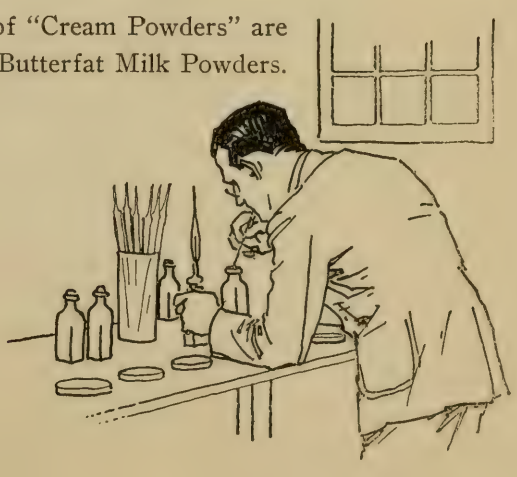
Fresh liquid pasteurized whole milk, standardized to contain 3.5 per cent. butterfat, is used for the manufacture of No. 25 Butterfat Milk Powder. In the powder, the percentage of butterfat runs from 26 to 27½ per cent. This product is commonly known as Powdered Whole Milk and can be used for all purposes for which ordinary cow's whole milk is used.

It is ideal for bakery purposes requiring whole milk, for the manufacture of milk chocolate and all milk confections, and for the production of Normal Whole Milk.

Both this powder and the No. 14 Butterfat Powder will remain sweet and in perfect condition for from three to six months, without refrigeration, and will keep indefinitely, in dry cold storage.

"Cream Powders"

In a group under the general designation of "Cream Powders" are the No. 50, No. 65 and No. 72 Merrell-Soule Butterfat Milk Powders.



The No. 50 is manufactured from milk containing 9 per cent. of butterfat, and the butterfat in the powder amounts to 50 per cent. In the No. 65 the butterfat content in the milk base is 15 per cent., in the powder 65 per cent. The No. 72 is made from standard cream, containing 18 per cent. butterfat in liquid form. There is approximately 72 per cent. butterfat in the powder.

The No. 72 is therefore the only one of the three which can legitimately be termed a "Powdered Cream," though the other two are commonly referred to as "Cream Powders." The cream made from the No. 72 powder will not whip, as whipping cream must contain 26 to 28 per cent. of butterfat in the liquid form.

All the Merrell-Soule "Cream Powders" are unexcelled for the manufacture of Ice Cream and Confectionery. The No. 50 is widely used by bakers in fancy crackers and cakes. No. 72 may be reconstituted into Fresh Pasteurized Cream.

Powdered Buttermilk

After Merrell-Soule Company had successfully produced the various Powdered Milk products which have been described, the engineering and chemical departments sought a way to adapt the Merrell-Soule process to buttermilk.

It was found that the lactic acid contained in liquid buttermilk presented new problems which had to be met. All difficulties, however, were eventually overcome, and a highly satisfactory product obtained.

In order to manufacture Powdered Buttermilk commercially, it was necessary to insure a supply of liquid buttermilk great enough to warrant the erection of a factory for the manufacture of Powdered Buttermilk exclusively. To this end, an agreement was made with one of the largest manufacturers of creamery butter in the United States, with its creamery located at Omaha. Merrell-Soule Company obtains its supply of fresh liquid buttermilk from this company's churns.

As in all Merrell-Soule products, quality is the first consideration in the manufacture of Merrell-Soule Powdered Buttermilk. The creamery purchases its cream on a strict quality basis, and in the grading of the cream the buttermilk is also graded. Only buttermilk from first-class cream is used in the manufacture of Merrell-Soule Powdered Buttermilk. Every sanitary precaution is employed, and our Omaha factory is under the direct supervision of the Merrell-Soule production and chemical departments, assuring a uniform product.

Merrell-Soule Powdered Buttermilk guaranteed to comply with all Federal and State food laws, has come to be one of the most important and valuable products offered for the baker's use. For particulars of its uses and advantages in the bakery, see pages 32-35.

Merrell-Soule Powdered Buttermilk is also employed with excellent results in cracker and biscuit manufacture, and for the manufacture of prepared flours. It can not be used for the making of liquid buttermilk which is to be used as a beverage, nor for the baking of custard or cream pies.

Merrell-Soule Powdered Milk Products in the Baking Industry

IN the following pages, it is our purpose to describe the general bakery uses of Merrell-Soule Powdered Skimmed Milk and Merrell-Soule Powdered Buttermilk, to give necessary technical information regarding the employment of these products as ingredients in the manufacture of baked goods, and to show the advantages gained by their use.

However, it is well to bear in mind that each day brings to light new discoveries made by men in the industry who are on the alert to extend their technical knowledge by research, investigation and experiment. Therefore it would be an impossibility for us to cover all the possible uses for our products in this book.

But we are confident that the reader will find herein much valuable instruction regarding the uses of Merrell-Soule Powdered Milk in the baking industry. We shall be more than pleased to hear from our readers who have questions to ask, and we will do our best to answer every inquiry clearly and fully.

Centuries ago the wise men of the East had a proverb to the effect that "he who knows not, and knows not that he knows not, is a fool; shun him!"

Bakers' Technical Service Department

In another class they placed those who, knowing not, but knowing that they know not, have begun to seek the light. To such as these, among the bakers of the United States, we are able to offer information which has been gained through practical experience and diligent research.

Of a few in the baking industry, it may be said that they know, and they know that they know. To them the rest of the proverb applies, which says: "follow them!" From these last-named we have received many valuable suggestions—hereby gratefully acknowledged.

Revelations in the baking industry, in recent years have caused bakers to see as never before what vocational training means, and that technical training is a necessity to the man who is to hold his own, in the strenuous competition which prevails in the industry.

Merrell-Soule Company long ago discovered the important fact that men who have at least an elementary knowledge of technical matters appertaining to the baking industry will be best able to sell goods to the bakery trade. With this in mind, the Company established its Bakers Technical Service Department, managed by an expert possessing the necessary vocational training. Experimental service is conducted in connection with this department, and a well-equipped laboratory, together with the services of specially qualified chemists, is available for the working out of any technical problem concerning the use of Merrell-Soule Products.

It is the desire of Merrell-Soule Company to assist in bringing the baking industry to a higher plane, by giving the baker and the supply house salesman a direct insight into the manufacture, uses and advantages of Merrell-Soule products, brought by years of research to their present high standard of quality.

General Baking and Cooking Uses

For general baking, Merrell-Soule Company offers the following Powdered Milk products:

Merrell-Soule Powdered Skimmed Milk, manufactured from separated milk, is used in the manufacture of bread, rolls, crullers, sweet yeast dough goods, crackers and biscuits, quick breads, cakes, cookies, cones, custards, cream fillings of all kinds and soft pie fillings.

Merrell-Soule No. 25 Butterfat Powder, a whole milk standardized to contain 3½ per cent. butterfat, and reduced to powder form, is used for fancy cakes, better grade cream fillings, custards, and in goods where additional butterfat and a fine butter flavor are desired.

Merrell-Soule Powdered Buttermilk is natural buttermilk, taken from the churns of one of the largest butter factories in the United States and reduced to powder form. It is known as the greatest bread improver on the market and its use up to 2½ per cent. in yeast doughs of all kinds will result in advantages that cannot be obtained in any other way. Crullers and doughnuts containing this product have become a much sought after specialty in districts where they have been introduced by progressive bakers. As an ingredient for batter cakes, such as pancakes of all kinds, buckwheat cakes and griddle cakes, it has long been recognized by manufacturers of mixed patent pancake flours as an ideal material.

Advantage of Merrell-Soule Powdered Milk for Baking

We have said that it is difficult to enumerate all the advantages of a good Powdered Milk, for even our oldest users are still finding new ways of working with this product. The greater benefits, however, may be summed up in these words: "Supply, Cleanliness, Convenience, Economy."

Your supply is assured because the Merrell-Soule factories, in the milk producing districts, manufacture a surplus of Powdered Milk from absolutely fresh milk, in the flush periods, so that there is an ample supply of Powdered Milk for the consumer in the seasons when milk is scarce. Thus supply and demand are equalized.

Cleanliness is paramount. The dairies producing the liquid milk are carefully watched, resulting in ideal sanitary conditions, and assuring the consumer a clean and pure milk supply, and one of lower bacteria content than the usual market milk. Also, there are no sticky condensed milk containers standing around to draw flies and breed bacteria in the bakery, when the baker is using Merrell-Soule Powdered Milk to make up just the supply he needs each day.

Great convenience results from the fact that Merrell-Soule Powdered Milk is always ready for use, in any quantity.

Utmost economy is achieved by the transportation of the milk solids in powder form. Carrying charges are reduced to a minimum, and there is no spoiling in case of freight delays. It does not require cold storage to carry stock. As one barrel of Powdered Milk contains the milk solids of 20 to 25 forty-quart cans of liquid milk, the baker is able to carry ahead at all times sufficient stock for all purposes, and can restore daily only as much milk as is required for that day. There need be no loss from sour milk.

Specific advantages applying to every class of baked goods are fully gone into in the following pages, which explain the definite uses, exact methods for handling and thoroughly tested formulas for the employment of Merrell-Soule Powdered Milk in the manufacture of baked goods.

Directions for Restoring Powdered Milk for Bakery Use

Merrell-Soule Powdered Skimmed Milk for bakery use. Mix 3½ ounces to 1 quart of water, or 14 ounces to 1 gallon of water. The best method is to place about half of the water in a pail or can, if you are working by hand, empty the sifted powder on top of the water, then beat up with an egg whip until dissolved. Add the rest of the water and stir again. If your bakery is equipped with a cake-mixing machine, put half the water in the kettle, adjust the whip attachment, put the sifted powder on top of the water while your machine is in motion. Run until thoroughly dissolved, and add balance of the water. For fine cream or custard work, it is well to strain the solution before adding to the rest of the ingredients. Water used in restoring skimmed milk should be tepid or lukewarm.

Merrell-Soule No. 25 Butterfat Powder, for bakery use. Mix 4½ ounces to a quart of water, or one pound of powder to 7 pounds of

water for an even gallon of whole milk. Dissolve according to the same method as for skimmed milk. Warm water should be employed, to secure quicker solution, on account of the amount of butterfat contained in this product.

Merrell-Soule Powdered Buttermilk. Amount and method to be used is particularly gone into and explained in an article regarding its use in yeast doughs, in a succeeding chapter.

Merrell-Soule Powdered Milk can be used as a dry ingredient, that is, mixed with other dry ingredients before water is added to the batch, but we recommend this only in specific instances where formulas show this method, as we have found by much experimenting that for general cooking and baking purposes better results are obtained if the Powdered Milk is mixed with water and used as milk.

Powdered *versus* Liquid Milk — Quality, Cost, Yield

It has been demonstrated that Merrell-Soule Powdered Milk will give superior flavor and higher quality to baked goods than can be obtained by the use of fluid commercial milk. In addition, Powdered Milk gives the same percentage of nourishing properties as fresh milk, with the advantage that the baker can at will increase these properties by using an added amount of milk solids, which cannot be done when liquid milk is used.

As to comparative cost, it is easy for any baker to determine, by experimenting with small trial doughs, the increased volume in baked goods, both in size and weight, obtainable by reason of the moisture-absorbing properties of Powdered Milk, as against sweetened-condensed, condensed or evaporated, formerly used in these batches.

To assist the buyer of baking materials in arriving at lowest cost, we think it well to call attention to certain points to be considered when purchasing Powdered Milk, in comparison with Sweetened-Condensed, Condensed or Evaporated, of the same butterfat content.

The first cost of all milk is based on its solid content, that is, percentage of butterfat and other milk solids. In figuring comparative value, the buyer should ascertain, through careful analysis, the amount of solids contained in condensed, evaporated or sweetened-condensed. The amount of added cane sugar shown in the solids must be taken into consideration at the market price of such sugar only. The solid content of these liquid products varies as does their price.

In Merrell-Soule Powdered Milk, the moisture content is set fast at 3 per cent. or less, because on this feature the keeping qualities of our Powdered Milk depend. It has been found that no bacterial action takes place in powder, the moisture content of which is so reduced. No foreign matter, no filler, no preservative is added.

A good test for showing the comparative value of Powdered Milk in expansive and absorptive qualities can be easily made by anyone, as indicated in the illustration, "A Good Baking Test Showing the Life of the Milk Powder." This is a positive proof of whether or not the baker is getting full value, and it plainly shows what Powdered Milk does in giving extra yield, expansion and life to doughs and mixes.

In determining comparative yield, it must be taken into consideration that instead of adding a liquid to the mix, the baker in using a solid, which will, on account of its albumen content and dried casein, absorb more water than high grade patent wheat flour.

In Yeast Raised Baked Goods

For all kinds of Bread, Rolls, Buns, Sweet Yeast Dough Goods, and Doughnuts, use 7 to 9 ounces of Merrell-Soule Powdered Skimmed Milk to each gallon of water, or, if figuring by weight of flour, use 3 to 4 per cent., or 6 to 8 pounds per barrel of flour.

Yeast doughs containing these amounts of milk, worked on a short and quick system will get a bloom with a rich crumb color and even texture, not obtainable through the use of any other method or ingredient. The crust will be thin and fine and the flavor most appetizing.

The effect of adding milk to bread, in place of water is, other things being equal, to increase its nutriment.

The analyses previously given represent the composition of milk. The casein and albumen are the nitrogenous constituents of the milk, and may be regarded as flesh-formers. The fat consists of stearine and other constituents which give to butter its characteristic flavor. Milk sugar, or lactose, is the carbo-hydrate present in milk powder and is inverted by the action of the invertase, as supplied by yeast turned into galactose, a substance which is non-fermentable and, as a consequence, is not lost by being expelled as carbon dioxide, but is retained and helps to make up the additional weight in baked goods which results from the use of milk. The ash consists chiefly of phosphate of lime and potash, which act as a solvent on wheat gluten and very materially improve the constitution of the water used in yeast doughs, which is a very important feature in producing a first-class loaf of bread.

Taking as a maximum quantity 8 pounds of Powdered Milk per barrel of flour, and as a minimum quantity 5 pounds, the initial cost of the dough would be higher, with the use of the Powdered Milk, but it must be taken into account that the added solids make a larger output per barrel, because when milk is used the dough must be made softer on account of the binding effect of the milk. This requires a great additional quantity of water, which is not lost because of the moisture-retaining powers of the Powdered Milk during fermentation and baking, and is returned as yield great enough to take care of the higher first cost mentioned. The amount of milk between these maximum and minimum figures therefore is of no additional cost to the baker and he is given free a better flavored loaf of high dietetic value, improved in texture, color and physical properties of the crumb.

It may be of interest to add here that for giving additional quality, Merrell-Soule No. 25 Butterfat Powder may be employed as a milk ingredient capable of furnishing whole milk standardized to 3.5 per

cent. butterfat. This percentage of fat present makes a most noticeable effect on the fineness of texture and color of crumb. The butterfat makes fineness of texture and thin crust, while the milk solids result in better bloom, owing to the unfermentable sugar of milk. This is left to caramelize during the process of baking, furnishing the distinctive characteristic appearance of the milk loaf.

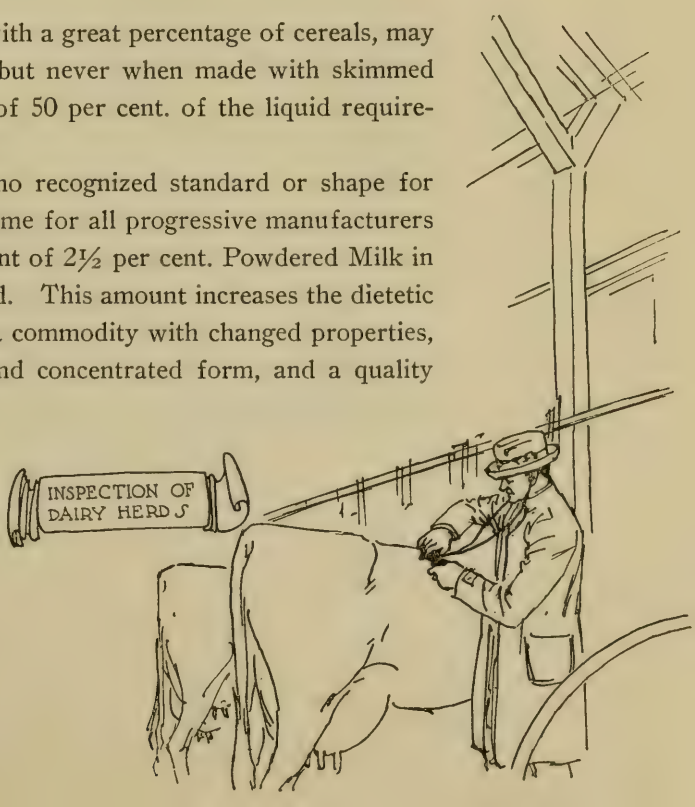
Milk Bread

Of course, Powdered Skimmed Milk, used in connection with lard or vegetable fat, will make nearly as good quality as when No. 25 butterfat powder is used, but lard or vegetable fats only affect the texture and shortness, and even fresh butter added as a fat does not give that mild flavor imparted when whole milk made from No. 25 butterfat powder is used.

It may be that some of the bread sold as "milk bread" contains no milk, but most bakers are conscientious, and use a most liberal quantity of milk, the result being that they produce a beautiful and honest loaf. As there is no stipulated quantity of milk that should be used in bread known as "milk bread," the quality of many brands put out under that label is not high.

Brown bread, which is made with a great percentage of cereals, may set up irritation in the stomach, but never when made with skimmed milk representing the equivalent of 50 per cent. of the liquid requirements of the mix.

It may be true that there is no recognized standard or shape for milk bread, but we think it high time for all progressive manufacturers to use at least the minimum amount of 2½ per cent. Powdered Milk in producing a standard loaf of bread. This amount increases the dietetic value of the bread and produces a commodity with changed properties, yielding nourishment in a new and concentrated form, and a quality hard for the housewife to rival.



It is our purpose to emphasize the value of milk in bread making, and the advantages that are to be derived from bread made with milk.

Bread Formulas

We contend that there is no fixed bread formula. What we call a bread formula is merely a combination of ingredients proportioned to suit the conditions under which the baker is working. There are many books full of bread formulas, each a little different from the other, and all striving to obtain the quality so much sought after. A fixed bread formula is impossible, as all bakers are working under different conditions of climate, temperature, manner of handling and shop conditions. In order to bring out an individual product, you must arrive at a standard character for your loaf. This special character and individuality so desired is produced by the addition of carbohydrates in the form of milk sugar and fat, added to the vital ingredients in bread making—flour, water, yeast and salt.

Milk, as we have seen, produces individual and distinctive excellence.

Calculating a Bread Formula

We consider, from experience, the best way to arrive at a bread formula is to figure the amount of pounds in baked bread required for a given order. Multiply this number of pounds by 18 ounces, which will represent the weight of the dough. To produce this amount of dough, divide its weight by the total percentage of ingredients to be used in making up this weight of dough. This will give the amount of flour to be used for this batch.

The most important point in arriving at a correctly composed formula is to know the absorptive power of your flour and the quality of your local water supply.

The amount of flour (or cereal substitutes) to be used in calculating a formula in this manner, represents 100 per cent., and taking for

granted, in this instance, that the absorption of the flour with the aid of the maximum amount of 4 per cent. Powdered Milk would be 60 per cent. water, we would consequently, in making up our percentage, figure as follows:

Per Cent.	
100	Flour and Cereals
60	Water
2	Yeast
1.75	Salt
4	Milk Powder
1	Malt
1	Fat
Total 169.75%	

This total, 169.75 per cent., is used to divide the weight of dough required. We will say, for example, we want to make 1000 one-pound loaves, which is equal to 1125 pounds of dough. We divide 1125 pounds by 169.75 per cent. which gives the quotient of 662 and represents the weight of the flour and cereal. This figure, 662, is then multiplied in rotation by all the per cent. figures of ingredients as given above. Starting with the percentage of water, it gives us in this instance 662 x 60 = 397, which figure represents the weight of the water. Next we multiply 662 by the percentage of yeast to be used, which would be in this instance 13 pounds, and the weight of other ingredients would be arrived at in rotation, as follows:

1125.000 ÷ 169.75%
169.75%) 1125.000 lbs. dough = 662 lbs. flour and cereal
662 × .60 = 397 " water
662 × .02 = 13 " yeast
11½ " salt
26½ " milk powder
6½ " malt
6½ " fat

Total 1,123 lbs. dough

Dusting flour will take care of decimals, which were dropped in arriving at the weight of the different ingredients and take care of amount lost during fermentation.

For calculation of sponge doughs, the baker can take from 50 to 70 per cent. of the flour in the sponge, use 54 to 63 per cent. water, ac-

cording to the kind of sponge he wants to make, the bulk of which is afterwards calculated off the percentage representing average absorption, when figuring water to be used in dough.

Method of Handling Doughs During Fermentation

Having found the correct weights of your ingredients, the next most important thing is the method of mixing, and the conditions that affect correct fermentation.

In mixing doughs, it is best to dissolve the Powdered Milk in part of the quantity of water to be used, before adding to the batch. Many bakers have sifted the Powdered Milk in with the flour, losing sight of the fact that there is generally not sufficient moisture left, when flour comes in contact with water, to properly dissolve the Powdered Milk. It requires a great deal more water and a little more time to put Powdered Milk in proper solution than it takes to dough up flour and water.

In bread making, or preparing other yeast doughs, if Powdered Milk is not dissolved separately, there is great danger that some of it will remain in the dough in its dry state and be baked in that way, with the result that part of its effect is lost. Besides, to add Powdered Milk undissolved in bread or other yeast doughs would be to defeat one of the economic reasons for its addition—that of absorbing and holding moisture.

Doughs with milk, to obtain best results, should be worked on a short, quick system. Temperature, however, should be maintained as far as possible between 80 and 82 degrees F. Of course the natural composition of the water has a great deal to do with the length of time required to mellow the gluten and age the dough, and for this reason the baker will find it necessary to modify his methods in order to get uniform results. A wide variance in texture or grain in bread, from day to day or from batch to batch, produced under seemingly the same

Merrell-Soule Powdered Milk Factory at Frewsburg, N. Y.
Equipped to Handle 80,000 Pounds of Milk Daily

A Good Baking Test, showing the Life of the Milk Powder

Make a thick batter of milk powder with water, place on a tin and bake in a hot oven. A live milk powder will puff up, retaining the moisture, while a dead milk powder will not retain the moisture. Note the difference as shown in the cut.

conditions with the same ingredients, is not to be denied. There are several causes, any one of which will account for the difference between good and poor texture. When a baker has arrived at what is considered a well balanced formula, he should be on the alert to avoid the following:

(1) Improper fermentation.

(2) Improper handling or preparation of the dough previous to making into loaves.

(3) Over-proofing before baking.

(4) Ovens too hot or too cold.

The baker should watch his fermentation most carefully, as the time between under and over-fermentation is not long, and depends entirely upon his judgment.

Taking up the second cause of poor texture, that of improper handling of the dough before making into loaves, we might say it is impossible to make bread of a fine texture, or grain, without a certain amount of manipulation of the dough during the process of fermentation. If the baker is lazy in "punching" his dough at the right time or in "cutting over," or in properly rounding or molding, he cannot expect to turn out the same loaf that the careful competitor produces.

Over-proofing of the dough before baking is to be avoided. Bread containing a sufficient quantity of milk, backed up with a goodly amount of yeast, will spring in the oven, thus holding its cubic yield, while over-proofed bread will shrink, fall back and produce open texture with inclination to be dry and crumbling.

Improper heat of the oven is also a drawback to good bread. If the oven is too hot, causing the bread to crust before the loaf has had time to become heated through, the result will be poor grain or texture, as the gases within the loaf are imprisoned by the crust already formed. As these gases become more heated, they will eventually follow along the line of least resistance and break through the loaf at its weakest point of crust already formed. This causes the loaf to be ill-shaped

and drawn, uneven and furrowed. Again if the oven is too cold, the loaf is too slowly heated to stop the action of fermentation in time, and the result is the same as that of over-proofing.

This discussion of the manufacture of bread, while not as lengthy as those gone into in technical books, is nevertheless of great benefit if the suggestions contained are followed by the reader. They will keep him out of trouble and lead him to produce, with little experimenting, superior bread and yeast dough goods of distinction. And he will find, if he is making poor bread, that the blame lies not with the Powdered Milk.

The fact that every baker we have known, who has adopted Merrell-Soule Powdered Milk as an ingredient in his bread, has increased his business seems to us to prove that milk bread is what the public wants, that the baker is producing a better loaf of bread than the housewife, and is getting her business.

Test to Establish Amount of Increased Yields in Pounds of Dough

Bread With 2½% Milk Solids vs. Bread Without Milk

The test below was made at one of the largest baking establishments in the United States and was certified to as correct by the manager of this bakery. Test made January, 1919.

Formula

	Control (without milk)	Test (Milk Bread)
Water	300 lbs.	300 lbs.
Flour	500 "	500 "
Yeast	7.5 "	7.5 "
Yeast Powder	2.5 "	2.5 "
Fat	7.5 "	7.5 "
Malt	5.0 "	6.0 "
Sugar	10.0 "	4.0 "
Salt	10.0 "	10.0 "
Merrell-Soule Skimmed Milk Powder	0.0 "	13.0 "
Extra water for dissolving milk powder		26.0 "
Total weight	842.5 lbs. dough	875.5 lbs. dough

YIELD

	Control Batch	Milk Bread
Loaves scaled 18 ozs. in dough	749	776
Loaves scaled as per test	747	791

POSSIBLE YIELD

(If scaled 18 ozs.)

$62.08 Milk Bread
59.92 Bread without Milk

$ 2.16 Gain in return

YIELD AS PER TEST

$63.28 Milk Bread
59.76 Bread without Milk

$ 3.52 Gain in return from Milk Bread

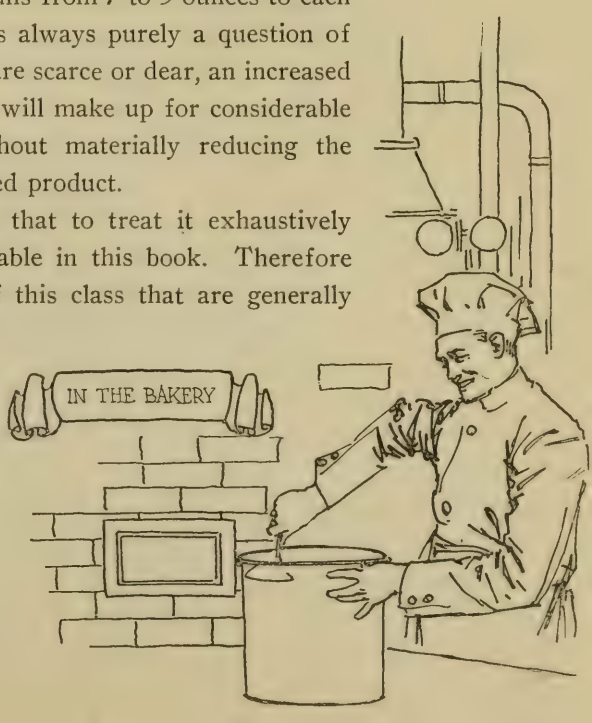
COST COMPARISON

Control (without milk) Credit 6 lbs. sugar used at 9½c = 57c	Milk Bread Additional Cost
1 lb. Malt Extract at 8½c	= $ .085
13 lbs. Merrell-Soule Skimmed Milk Powder at 25c	= 3.25
	$3.335
Credit sugar saved	.57
Total cost increase on batch 500 lbs. flour made with 2½% milk solids	$2.765
Normal yield extra bread sold at 8c per pound	2.16
Total cost increase on batch of 500 lbs. flour	$ .605

Sweet Yeast Dough Goods

The amount of Merrell-Soule Powdered Skimmed Milk or No. 25 butterfat powder to be used commonly runs from 7 to 9 ounces to each gallon of water used in the batch, but is always purely a question of quality. In times when eggs and butter are scarce or dear, an increased quantity of Powdered Milk in the batch will make up for considerable decrease in the other ingredients, without materially reducing the quality or nourishing value of the finished product.

This really is such a broad subject that to treat it exhaustively would require more space than is available in this book. Therefore we shall deal but briefly with goods of this class that are generally known and profitable.



Arriving at a Sweet Yeast Dough Formula

Recipes for coffee cake doughs vary but little. But every baker who would profit by his individuality must have a pet method of his own, whereby the material is put together. We shall try to answer the question as to what method tends to bring out the best results from material at hand.

Many bakers seem to think that all that is necessary in putting a batch of sweet yeast dough together is to place the material in a bowl, dissolve the yeast, stir, and add the flour. This is very simple, but not effective.

There are quite a few bakers who adhere to a sponge method in this class of goods and for quick doughs. We agree that this means a big saving in the amount of yeast necessary. Apart from this, however, there is nothing really commendable about a method of this kind.

It seems certain that very few bakers would think of putting even the cheapest kind of a cake together without first creaming the butter and sugar and working in the eggs slowly, thereby lightening the materials by the creation of air cells. But there are very few of these same bakers who realize that this method, applied to the preparation of sweet doughs, has the same effect, and gives a more thorough and even distribution of materials while the dough is in the process of fermentation. For a sweet yeast dough for general purposes the following is a good formula:

12 oz. Merrell-Soule Powdered Skimmed or Whole Milk
12 oz. Fat mixed with butter
12 oz. Sugar
6 oz. Yeast
4 Eggs
½ oz. Salt
2 qt. Water 75 to 85 degrees F.
Little Mace and Lemon Oil (or any other flavor desired)
Flour to make medium stiff dough

Undoubtedly the best method that we have found for embodying these materials into sweet yeast dough is the following:

First dissolve separately the yeast in a little warm water and add

a little sugar and flour. Now place in the bowl or mixer the eggs, sugar, spices and milk. Blend these together, add the remainder of the water and make into a medium soft dough with flour. When the dough is thoroughly smooth add the butter, which has been creamed a little on the bench. Incorporate this thoroughly into the dough, then add the yeast, which will by this time have quite a start, and work through the dough just to "clear". This dough, as all milk doughs, if kept "young" up to the time of making up and panning, then given full proof before going into the oven, will result in greater bulk in proportion to the weight of the dough, than dough made by any other method.

Almost every baker is familiar with the general run of goods usually manufactured from sweet yeast dough, such as coffee cake goods, snails, pretzels, stollen, streusel, etc., by adding fruit or rolling in additional butter, sprinkling with crumbs or nuts or finishing off with fresh or canned fruits, thereby expressing the baker's individuality and peculiar style.

Powdered Buttermilk

Uses and Value in Baking

THE value of Buttermilk as a health food has long been recognized. Liquid buttermilk has been in use in the manufacture of soda goods, such as soda biscuits, Irish soda bread, buckwheat cakes, the various griddle cakes, and in molasses and spiced goods. Some bread makers, also, have used liquid buttermilk.

Merrell-Soule Powdered Buttermilk offers buttermilk in the dry, powdered form and its remarkable food value, along with its excellent baking properties, speedily recommended it for commercial uses, especially in bread making. Communications from all parts of the country tell of excellent results being obtained from Merrell-Soule Powdered Buttermilk. These come principally from bread and cracker bakers.

Merrell-Soule Powdered Buttermilk offers one of nature's most valuable foods, and with the knowledge that it has always been esteemed as an ingredient in yeast doughs and soda leavened goods, we find the following interesting difference.

Take every one of the good points, except the higher butterfat content of our No. 25 butterfat powder, enumerated in the preceding pages, add to them the following facts, and you have the advantages obtainable from Merrell-Soule Powdered Buttermilk. Our analysis shows it similar to skimmed milk in composition (except that it is higher in butterfat) and possessed of acidity, both valuable assets.

Its Lactic Acid Content and Value of Lactic Acid

The softening of the gluten (the most important result of fermentation), due to the large per cent. of lactic acid contained in the powdered buttermilk, will incur a considerable saving of time and produce a livelier and more healthy fermentation, relieving any strain on the yeast and reserving the yeast functions to produce that desirable "spring" in the oven, which every baker is so anxious to get.

This quantity of lactic acid is also of immense value to all bakers, in that it will positively prevent the occurrence of "rope," the most dreaded disease of the bakery. Rope bacilli cannot exist in the presence of a small quantity of lactic acid in the dough.

Let this be noted—that vinegar, acetic acid and commercial acid compounds are used for and will prevent rope. But that is the only excuse they have for being in the dough. They destroy the bloom of the bread, make poor texture, and do not increase the yield. Instead of that, they raise the price of the moisture content of your loaf. Their use is full of danger.

The lactic acid in buttermilk will make any excessive amount of starch more palatable and consequently more digestible. It will also give you a whiter crumb, on account of its bleaching qualities.

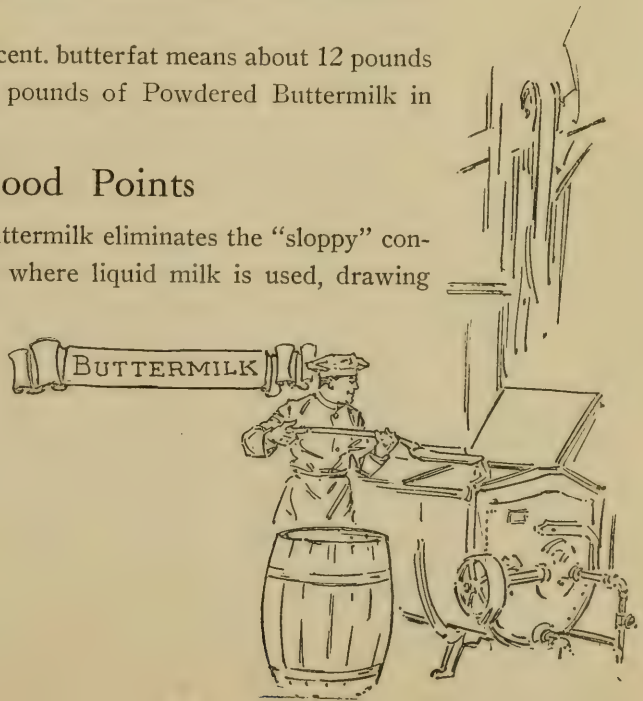
Butterfat Contained in Powdered Buttermilk

Butterfat is the highest quality of shortening available. Since the powdered buttermilk contains from 8 to 10 per cent. fat, the baker will either enjoy a considerable saving in other fats or else he will produce better quality. On a preceding page, in speaking of "Butterfat Powder," we have explained that butterfat is composed of stearine and other constituents which give to butter its characteristic flavor. This flavor, because of the large per cent. of butterfat contained in Powdered Buttermilk, is transferred to the doughs containing this powder, and explains why it is so desirable.

It is well to realize that 10 per cent. butterfat means about 12 pounds of creamery butter to every 100 pounds of Powdered Buttermilk in your barrel.

Other Good Points

The dry state of Powdered Buttermilk eliminates the "sloppy" conditions usually found in bakeries where liquid milk is used, drawing flies and vermin.



Its keeping qualities are excellent and it can be stored in a dry cool place almost indefinitely.

All the advantages of our other milk products, such as Economy, Supply, Cleanliness and Convenience also pertain to Merrell-Soule Powdered Buttermilk.

Directions for Use

We recommend the use of Merrell-Soule Powdered Buttermilk for goods raised with yeast or bicarbonate of soda only, as in baking powder goods the lactic acid content of this powder will have to be taken into consideration both as to strength and volume. The cream tartar, phosphate or other acid content of the baking powder mix will have to be cut down in proportion, or the soda content increased.

In yeast dough goods an ounce to a quart of water, or 2 per cent. if figured by the weight of flour used, would give us 4 pounds to the barrel, which is the minimum that ought to be employed. 2½ per cent., or 5 pounds to the barrel is, on account of the lactic acid content, the maximum amount that should be used. It should be thoroughly dissolved in water before being added to the dough.

Many bakers who wish to produce a quality loaf are using an additional quantity of Merrell-Soule Powdered Skimmed Milk with the maximum allowance of 2½ per cent. Powdered Buttermilk.

Stir the powder in the buttermilk barrel every time you take out a quantity. This keeps it from caking.

Buttermilk Bread

Formulas for this class of goods can easily be worked out, using a schedule as previously explained.

There is no shop trouble with Powdered Buttermilk, and the fermentation in the doughs, although a little speedier, will not present any problems or necessitate any considerable change in methods.

The word "Buttermilk" has great advertising value. Buttermilk bread, buns and doughnuts should immediately become popular in localities where they are introduced. Merrell-Soule Company will be glad to furnish display cards with advertising suggestions to purchasers of this product.

Rope: Its Formation and Habits

WHILE we have made passing mention of Rope, in the pages devoted to Powdered Buttermilk, we feel that the importance of this most dreaded plague of the bakery demands further attention. Besides, although bakery trade papers, experts and lecturers have given their attention to the subject, and the United States Government has issued printed directions for eliminating the trouble, there still remains much to be said of practical value to the average baker.

Origin of Rope

Rope in bread is the second life cycle of a spore originating from bacilli that come, in the first place, direct from the soil, being blown up in the dust which settles upon the ripening ears of grain. Many of them adhere to the outside of the grain-berry and get transferred into the flour with particles of bran. They are supported by the enzymes or ferments which are found in the nitrogenous underlayers of seed skin and in the embryos or seed germs. Potatoes have been credited with being associated with the rope producing germ on account of growing in the ground. However there is no scientific proof of this identity except such as may be based on microscopic appearance. There are many other conjectures equally unproved. The next important source of origin is through infection by dust, sweepings or dirt containing spores which may have remained dormant from some previous epidemic.

Its Development

Ropiness seldom develops, so far as can be judged by the naked eye, during the first eight hours after the loaf has been baked. But in the event of bacilli being sufficiently abundant in the original dough, and the surrounding conditions being favorable to their growth and multiplication, it will become obnoxiously evident within the succeeding eight hours, and will then mature rapidly and prove highly objectionable. The center of the loaf will break down, when the rope has run a fairly long course, and the crumb not consumed by decomposition

can be rubbed into a molasses-like mass, which when pulled apart will disclose long strings of slime. Hence the name rope.

Heat Does Not Destroy These Germs

Even the strongest and longest heat of an oven does not destroy this germ. The spores possess an exceptional vitality, and after a baked loaf has been laid aside, the bacilli germinate and yield a new generation, which starts the life cycle on its way again.

Acidity Affects Them

A certain amount of acidity in this dough is destructive to the germ. It is therefore well that the baker make his dough slightly acid. Soured milk or lactic acid is the most desirable medium, and one ounce of Merrell-Soule Powdered Buttermilk to each quart of water used in yeast doughs is sufficient to check the power of any organism which may be present. Commercial acids and vinegar produce the same results, but on account of their strength they are dangerous to the bloom of the loaf and color of the crumb, and the baker will more wisely use milk, which has always been one of the ingredients of bakery products.

Methods of Elimination

If ropiness establishes itself in a bakery, it is extremely difficult to eradicate. For this reason bakers should vigilantly guard against it by making their doughs slightly acid, keeping their shops well ventilated, using the sponge system as much as practicable, and keeping their flour and cereals away from damp places, stacked so that air can circulate well around the bags and barrels.

A commercial acid, such as vinegar or compounds made for the purpose, should be used to spray or wash all utensils, machines, floors and walls of the bakery, not overlooking the packing room, store, delivery and shipping equipment. The Merrell-Soule Technical Service Department will be glad to furnish information to any baker who has this trouble, designed to help his specific case.

Use of Merrell-Soule Products in Cake Baking

IT is not our purpose to present an exhaustive treatise on modern practical cake baking in this chapter. We merely desire to give some valuable, yet simple, up-to-date recipes showing the advantages of using Merrell-Soule Powdered Milk in cake baking, that will enable the beginner, as well as the expert baker, to turn out high class cake goods at a comparatively low cost.

All recipes contain Merrell-Soule Powdered Skimmed Milk, to be mixed in its dry state, or restored to liquid milk, as directed.

For Cakes in General

Successful cake bakers have long realized the benefit of using an entirely soluble powdered milk. Most bakers who have been induced to buy cheap milk powders have had sad experiences on account of the insolubility of these powders. This is the main reason why Merrell-Soule Powdered Milk is so uniformly used in the shops of successful representative bakers throughout the country. They have long since found out that their ability to obtain a readily soluble milk powder renders liquid fresh milk no longer necessary in the making of quality baked goods, for Merrell-Soule Powdered Milk will do everything that fresh cows' milk will do, at less cost and trouble.

Cake Receipes

In presenting the following recipes, we wish to say that they have been thoroughly tried and proved, constitute an excellent selection of medium priced commercial baked goods, and are so arranged that they can be easily referred to at any time. Let us give this advice, first of all— don't guess at quantities. Measure and weigh all ingredients carefully.

Ingredients used in these recipes can be substituted by the use of powdered egg, dissolved at the rate of one pound in three pints of

water, which is equivalent to 3½ dozen shell eggs. Use the same quantity of dissolved egg as you would shell eggs. For instance, if your recipe calls for one pint of egg or ten shell eggs, use one pint of dissolved egg powder.

It has been proven that cereal flours, such as corn flour, rice flour, corn starch and tapioca flour can be used with excellent results. Rice flour and corn starch are preferred. When these are used, it is best to add them when creaming the sugar and shortening. This will show quite an improvement in the appearance of the grain in the cake.

Common Cakes and Quick Breads

Milk Biscuits

6 lb. Flour
1 lb. Lard
4½ oz. Baking Powder
Salt
8 oz. Merrell-Soule Skimmed Milk Powder dissolved in
2¼ quarts water

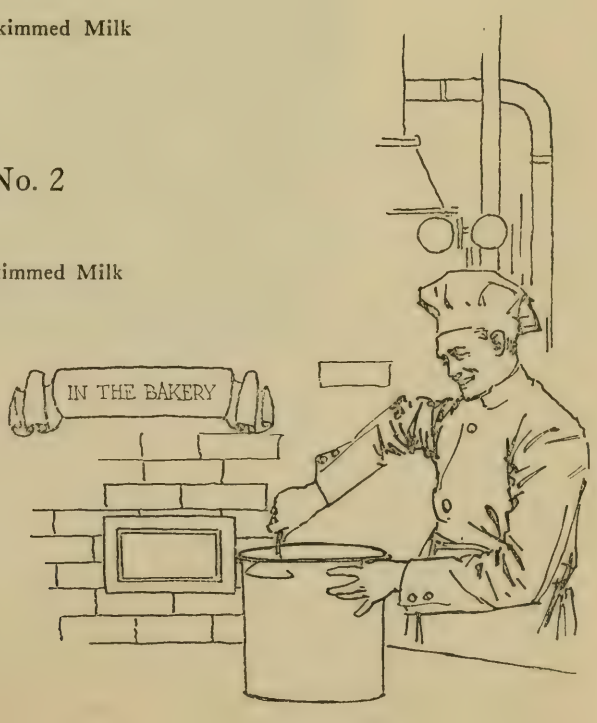
Sift flour and baking powder in a bowl, add salt and lard, rub between the hands until fine, then add milk powder dissolved in water. Mix thoroughly and throw out on bench well dusted with flour, pin out about ¾ inch in thickness and cut with biscuit cutter. Place on a pan so they will touch. Bake in a brisk oven.

Cup Cakes No. 1

2 lb. Sugar
1¼ lb. Butter and Lard
10 Eggs
4 oz. Merrell-Soule Powdered Skimmed Milk
4 lb. Flour
2 oz. Cream Tartar
1 oz. Soda
1 qt. Water
Lemon and Mace Flavor

Cup Cakes No. 2

1½ lb. Sugar
12 oz. Butter
¾ pt. Egg Whites
4 oz. Merrell-Soule Powdered Skimmed Milk
3 lb. Flour
2 oz. Baking Powder
Vanilla Flavor



Rub sugar, butter and Powdered Milk together until light, adding a few eggs at a time. Sieve in cream tartar and flour, make bay and pour in soda dissolved in water. Mix and drop in cup cake tins. When a recipe says baking powder, as No. 2, always sieve powder in the flour.

Spice Cups

1 pt. Molasses
6 oz. Sugar
6 oz. Lard
2 oz. Merrell-Soule Powdered Buttermilk dissolved in
1 pt. Water
1 oz. Soda
2 lb. Flour
Spices

Rub sugar, lard and soda in bowl, stir in molasses, add spice, cinnamon, ginger and cloves, half teaspoon each, add buttermilk powder dissolved in water, mix in flour. Drop in tins and bake in brisk oven.

Corn Bread

2 lb. Corn Meal
1 lb. Wheat Flour
½ lb. Butter or Fat
½ lb. Sugar
½ oz. Salt
6 Eggs
4 oz. Merrell-Soule Powdered Skimmed Milk dissolved in
1 qt. Water
2½ oz. Baking Powder

Sieve corn meal, flour and baking powder in a bowl, add salt and sugar, stir beaten egg into dissolved Powdered Milk and water, pour into dry ingredients. Mix. If this does not make a good batter, add a little water. Now stir in melted butter. Pour in greased baking sheet and bake in medium oven.

Corn Muffins

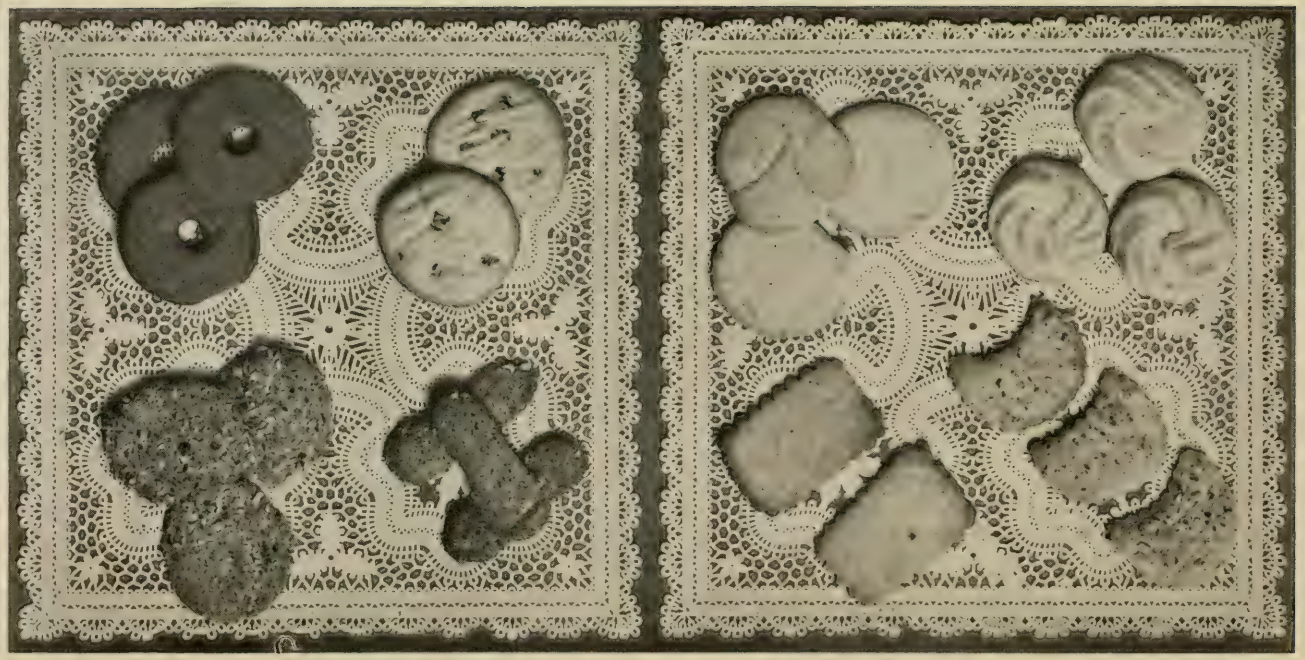
Use corn bread mixture, drop in cup cake tins, and bake in a brisk oven.

Fried Cakes

1¼ lb. Sugar
4 oz. Butter
4 Eggs
3½ oz. Merrell-Soule Powdered Skimmed Milk dissolved in
3½ lb. Flour
1 qt. Water
2 oz. Baking Powder
Mace
Salt

Cup-Cakes

Milk Biscuits



Different Varieties of Cookies made from Cookie Doughs No. 1 and 2

Mix sugar, butter, mace and eggs, add milk, then flour and baking powder sifted together. Mix these together and work them off same as doughnuts. If a doughnut machine is used for dropping them in the grease, make the mixture a little slacker by using a little more milk.

Jelly Roll (Bowl Mix)

11 oz. Sugar
2 oz. Butter
2 oz. Merrell-Soule Powdered Skimmed Milk dissolved in
½ pt. Water
7 Eggs
1 lb. 2 oz. Flour
1¼ oz. Baking Powder
Lemon

Rub sugar and butter, add eggs a few at a time, when well creamed up sift on flour and baking powder, make bay and pour in dissolved Powdered Milk and lemon flavor. Line baking sheet with paper, and pour on the mix. Bake in a brisk oven. When baked turn upside down on a cloth or paper the size of the pan. Wet the paper and remove. Spread with jelly or any other filling and roll.

Graham Muffins

1 lb. Sugar, a little molasses
1 lb. Lard, little salt
6 Eggs
3½ oz. Merrell-Soule Powdered Milk dissolved in
1 qt. Water
3 lb. Graham Flour
1 lb. Wheat Flour
3 oz. Baking Powder

Rub sugar, lard, molasses, salt and eggs, add some of the Powdered Milk dissolved in water, then flour and baking powder, finally add enough milk to make a medium stiff batter, drop in cup cake tins and bake in brisk oven.

Strawberry Shortcake

2 lb. Flour
6 oz. Butter
2 oz. Baking Powder
2 oz. Merrell-Soule Powdered Skimmed Milk dissolved in
1 pt. Water
4 oz. Sugar
Salt

Handle like mix for fruit biscuits. Roll, cut and bake in layer cake pans, or if used for individuals, cut out with biscuit cutter.

Sweet Doughs for Coffee Cakes, Hot Cross Buns, Etc.

Sweet Dough for Coffee Cake

In	8	qt. Water 110
Dissolve	1	lb. Yeast
	4	oz. Salt
	2	lb. Butter
	2	lb. Lard
	3	lb. Bread Sugar
Then add	1	qt. Eggs
	1	lb. Merrell-Soule Powdered Skimmed Milk
	½	dz. Lemons, rind and juice

Method: Mix all well and add bread flour mixture to make a very stiff dough. Set the proof and knock down twice before it is ready for use.

Hot Cross Buns

Make a straight dough:

10	qt.	Water
2	lb.	Merrell-Soule Powdered Skimmed Milk
3¾	lb.	Sugar
12	oz.	Yeast
3	lb.	Butter Substitute
2	lb.	Compound Lard
6	oz.	Salt
5	pt.	Eggs
		Juice and Rind of 4 lemons
		Flour to make stiff dough
3	lb.	Small Raisins

Place the buns close together on tins and wash with eggs. After they are raised half way, split them with a sharp knife, then finish raising with a little steam. When baked, ice with ordinary icing or dust with sugar.

In arriving at a wet dough formula for coffee cake goods, see page 30.

Sheet, Layer, Wine and Loafcake Mixes

Sheet Cakes

Cake Base for all varieties for Slices, Squares or Pyramids.

1½ lb. Sugar
8 oz. Lard
6 Eggs
3 oz. Merrell-Soule Powdered Skimmed Milk dissolved in
1½ pt. Water
1½ oz. Baking Powder
2½ lb. Flour
Lemon Flavor
Salt

Rub sugar, lard and eggs, sift on flour and baking powder, add milk dissolved in water and mix. Bake in greased and floured sheets. When cool, cut in any shape desired, after setting together with icing, cream or jelly.

Spice Sheet

1 lb. Brown Sugar
6 oz. Lard
6 Eggs
3 oz. Merrell-Soule Powdered Skimmed Milk dissolved in
1¾ pt. Water
1¾ oz. Baking Powder
Nutmeg
Allspice
Cinnamon and a little melted chocolate
2½ lb. Flour

Mix and use as preceding formula.

Ribbon Sheet

1½ lb. Sugar
6 oz. Lard
3 Eggs
3½ oz. Merrell-Soule Powdered Skimmed Milk dissolved in
1 qt. Water
2 oz. Baking Powder
2¼ lb. Flour
Lemon

Mix same as other sheet cakes. Divide dough in three parts, leave one natural color the second red with a little strawberry color and

make the third chocolate color, using a little melted chocolate. Put alternately on greased and dusted pan, or bake each color separate in paper lined pans.

Cheap Sheet Cake

	2 lb.	Sugar
	12 oz.	Lard
	2	Eggs
	4 oz.	Merrell-Soule Powdered Skimmed Milk
	1 qt.	Water
	3½ lb.	Flour
	2½ oz.	Baking Powder
		Salt
		Flavor

Mix same as preceding formulas. Put on greased and floured sheet and spread. Ice top with cold water icing or cut up in any shape desired.

Layer Cakes

Mixture for Large Layer Cakes:

Rub well together	8 oz.	Powdered Sugar
	6 oz.	Merrell-Soule Powdered Skimmed Milk
	½ oz.	Salt
	12 oz.	Lard
	12 oz.	Butter
and		a little vanilla
Then add	1 pt.	Yolks
	1 pt.	Mixed Eggs
	1 qt.	Water
Then sift together and add	4¼ lb.	Flour (spring)
	1 lb.	Substitute (starch)
	1½ lb.	Powdered Sugar
	1½ oz.	Baking Powder

Method: Mix thoroughly into a medium soft batter, then scale into layer tins.

Spread out flat and bake in medium oven. This batch makes about 35 layers.

Wine Cake

Cream well	3 lb.	Powdered Sugar
	1 oz.	Soda
	2 oz.	Salt
	8 oz.	Merrell-Soule Powdered Skimmed Milk
	1¾ lb.	Compound Lard
Then add gradually	1½ pt.	Eggs
Then	2 qt.	Water
Sift and then add	6 lb.	Bread Flour
	2 oz.	Cream Tartar

Method: Mix well and bake in paper lined tins. Cut on top with a knife dipped in oil, before baking, this will produce a nice "split".

Merrell-Soule Golden Anniversary Cake

(Commercial Pound Cake Mix)

Rub well until light	15 lb.	Powdered Sugar
	1 lb.	Flour
	1 lb.	Merrell-Soule Powdered Skimmed Milk
	¼ lb.	Salt
	½ lb.	Butter Flavor
	6 lb.	Compound Lard
	2½ lb.	Margarine or Butter
	½ pt.	Vanilla
		Little Egg Coloring
Then add slowly	10 pt.	Eggs
Then	5 pt.	Cold Water
Then sift together and mix in	16 lb.	Flour
	1 lb.	Powdered Sugar

Beat this mixture until very light and smooth, and then fill in paper lined tins.

Silver Cake

Cream well	2 lb.	Powdered Sugar
	½ oz.	Salt
	5 oz.	Merrell-Soule Powdered Skimmed Milk
	4 oz.	Butter Flavor
	1 lb.	Compound Lard
		Vanilla or Almond Extract
Then add gradually	2½ lb.	Bread Flour
	1 qt.	Stiff Beaten Egg Whites
	1 qt.	Water
	1 oz.	Baking Powder

Beat up well and fill in paper lined tins. Sprinkle powdered or granulated sugar on top and bake in good oven.

Water Sponge Cake

(With Powdered Milk)

Beat	2 lb.	Powdered Sugar
	2 pt.	Yolks
	1 pt.	Hot Water
		A little Vanilla
Then add carefully	2 lb.	10 oz. Bread Flour
	4 oz.	Powdered Skimmed Milk
	½ oz.	Baking Powder
	½ oz.	Salt

Bake in paper lined tins.

Cookies, Jumbles, Snaps, Drop Cakes and Fancy Cakes

Cookie Dough No. 1

Cream well	1½ lb.	Butter
	1½ lb.	Lard
	5 lb.	Powdered Sugar
	2 oz.	Soda
	4 oz.	Merrell-Soule Powdered Skimmed Milk
Then add slowly	1 pt.	Eggs
Then sift on	8½ lb.	Flour
	3 oz.	Cream Tartar
Make bay and pour in	1 qt.	Water

Cookie Dough No. 2

Mix the same as Cookie Dough No. 1.

	7 lb.	Sugar
	2 lb.	Butter
	1½ lb.	Lard
	½ pt.	Eggs
	2 oz.	Ammonia
	½ lb.	Merrell-Soule Powdered Skimmed Milk
	2¼ qt.	Water
		A little Egg Coloring and Flavor
Then	14 lb.	Flour

Out of these two cookie doughs you can make (See illustrations opposite page 41.)

Sugar Cookies	Almond Cookies
Cocoanut Cookies	Peanut Cookies
Seed Cookies	Spice, Nut or Raisin Cookies

(NOTE: For Fruit Cookies, etc., see recipes under the heading of "Confectioners Mince.")

Vanilla Jumbles

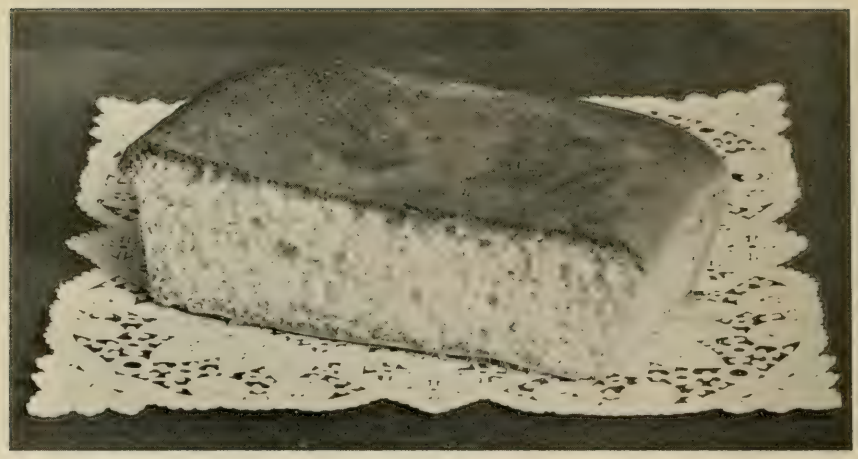
Cream well	3 lb.	Powdered Sugar
	1½ lb.	Lard or Butter
	¾ oz.	Soda
		A little Vanilla
	1 oz.	Salt
Then add slowly	1 pt.	Eggs or Yolks
Sift on	5½ lb.	Flour
	3½ oz.	Cream Tartar
Then make bay and pour in	1½ pt.	Water in which is dissolved
	4 oz.	Merrell-Soule Powdered Skimmed Milk

Other varieties of jumbles may be made from this mix.

Wine Cake

Merrell-Soule Golden Anniversary Cake

(See page 45)



Water Sponge Cake (With Powdered Milk)

Silver Cake

Spiced Jumbles

1 lb. Butter or Lard
1½ lb. Granulated Sugar
1 qt. Eggs.
1 lb. Raspberry Jam
1 pt. Molasses
½ oz. Baking Soda
1 pt. Water in which is dissolved
2 oz. Merrell-Soule Powdered Skimmed Milk
6 lb. Bread Flour
Spices as desired

Directions for making jumbles:

Rub your mixes smooth and if too stiff, add a little milk. Then press through a jumble bag or machine onto greased and slightly dusted pans, sprinkle on granulated sugar and bake in medium hot oven.

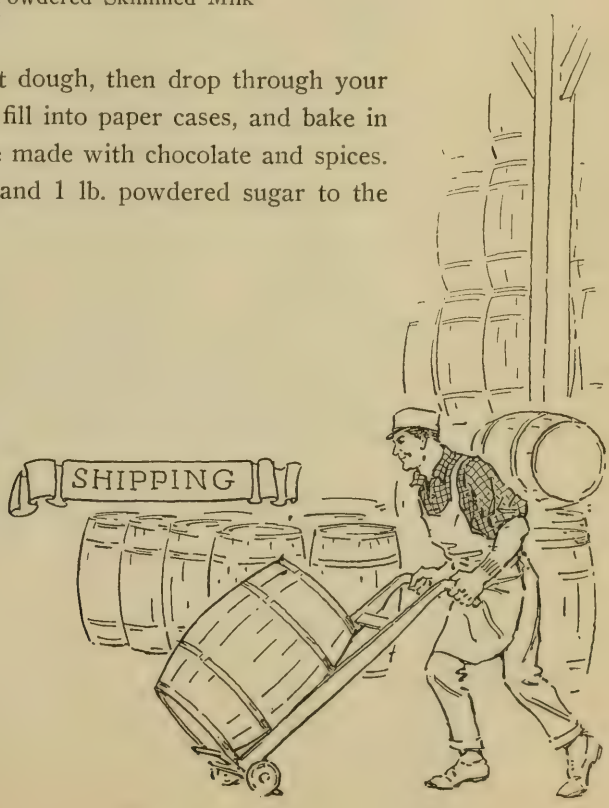
The same recipe may be used for Walnut Jumbles and Chocolate Jumbles, substituting Walnut Meats or Chocolate for the spices.

Drop Cakes

Cream together
6 lb. Sugar
3 lb. Compound Lard
½ lb. Butter
½ oz. Ammonia
Vanilla

Then add
3 pt. Eggs
3 pt. Water in which is dissolved
6 oz. Merrell-Soule Powdered Skimmed Milk
6 oz. Baking Powder
12 lb. Flour

Method: Mix into a smooth soft dough, then drop through your hands on greased and dusted tins or fill into paper cases, and bake in good oven. These drop cakes can be made with chocolate and spices. For chocolate add 1½ lbs. of cocoa and 1 lb. powdered sugar to the above recipe.



For Pie Baking

Pie Crust and Pie Filling

A GOOD "bakers pie" is judged not only by the nature of the crust, but also by the quality of the filling and fullness of the pie. To combine both points, conforming to the standard set by the public, and also to sell at a profit, means to possess a full understanding of the pie baking business.

Pie Crust

It is difficult to give any set recipe for pie paste. Flours and lards vary so much in quality that it is really best to let the baker adjust a recipe to the materials at hand, after calling his attention to a few essential facts.

One shipment of lard may be tough, another light and short; one contains more moisture and another more fat, so if the recipe given does not produce satisfactory results, look to your materials. Flours vary in softness and likewise water-absorbing qualities. Therefore it is well that both flour and lard in the manufacture of paste should be well chosen and adapted to a formula, if you would produce good pie crust.

Pie Formula and Method

To arrive at a formula for pie paste, the baker should ascertain how much water the flour, when mixed with fat, will actually take. If you know this, and apply the knowledge, it will make a good deal of difference as against the method pursued by the baker who keeps on pouring water into his dry ingredients, little by little, until finally he arrives at what he thinks is the right consistency.

To make an ordinary, reasonably-priced good crust, you must weigh your flour and lard, instead of guessing at it, and dissolve the salt in the required amount of water, being certain how much water it

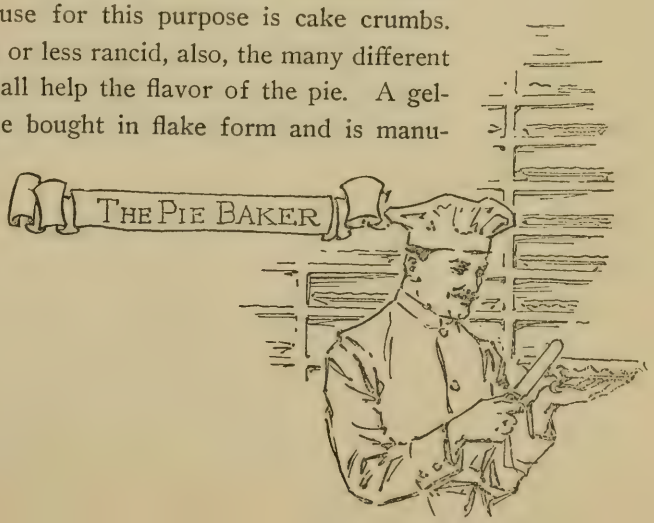
takes to mix the dough so you may pour in the full amount at once, thereby saving the overworking of the dough. As an example we might say ordinary winter wheat flour takes one quart of water, four pounds of flour, 2 pounds of lard, one ounce of salt, two ounces Merrell-Soule Powdered Skimmed Milk.

Very satisfactory results have been reported by some successful pie bakers, from the addition of two ounces of Merrell-Soule Powdered Buttermilk, thoroughly dissolved in the water of this mix. The Powdered Buttermilk has a peculiar effect on the gluten, mellowing it by the lactic acid contained. Further, Powdered Buttermilk is known to have great leavening value and the lactic acid flavor is very agreeable, especially when great quantities of cereals, other than wheat flour, are used. It also tends to make the entire baked crust more palatable and digestible.

The method for mixing pie ingredients is simple enough. Rub the lard through the flour and add all the salted water, at a low temperature, at once and mix without overworking, which is positively harmful to a flaky and short pie crust.

Pie Filler

The first profit in pie lies in the filler, or thickening which stabilizes the fruit content of the filling. The public prefers a full pie. If you cannot make a full pie out of fruit and sugar and sell it at a profit in your locality, you must use stabilizers or thickeners to fortify the fruit content of your filling. For this many bakers use corn starch, which is a fair material, but makes a filling of a tough nature, and the second day the pie looks flat and unsalable. Some bakers use wheat flour, which is of course to be desired in place of corn starch if a filler must be used. The worst thing to use for this purpose is cake crumbs. These old cakes are always more or less rancid, also, the many different materials in the cake do not at all help the flavor of the pie. A gelatinized corn flake which can be bought in flake form and is manu-



factured especially for this purpose is probably the best ingredient to use. Another good filler can be made, as follows:

12 qt. Water
2 lb. Ground Tapioca dissolved in little cold water
6 lb. Sugar

Put all in a kettle on the fire and stir until the milkiness of the tapioca disappears, when the mixture is done. It should never boil, only become glossy in appearance. It is absolutely tasteless and will bring out the most delicate flavor of any fruit or admixture.

Pie Fillings

Every baker seems to have his own method of preparing pie fillings, especially if fresh fruit is plentiful or he is so situated that he can get a good price for a product requiring no filler. Therefore we will touch only lightly on this subject, but would like to advise this—sharpen the taste of any fruit possessing an insipid flavor with lemon juice or citric acid. Also, be careful that your fruit is in such a condition that it will be properly cooked in the pie while baking. Some fruits need to be partly cooked before being placed in the pies. If no so-called filler is used and your fruit is inclined to be sloppy after the addition of sugar, we advise that it be cooked over the stove for a few minutes, then add 2 to 3 ounces of flour to each gallon of fruit.

The Best Sellers

Firm, smooth custard pies of all sorts, most seasonable in spring and summer, and delicately flavored mincemeat and pumpkin pies, in big demand during fall, winter and spring, are no doubt the most favored varieties and best sellers.

Merrell-Soule Company having supplied the essential ingredients of these varieties for many years, feels competent to offer suggestions to pie bakers for the improvement of these best sellers, especially the employment of Merrell-Soule products therein.

Custard Filling for Custard Pies

Custard No. 1

5 oz. Sugar
5 oz. Merrell-Soule Powdered Skimmed Milk
4 Eggs
4 Yolks
1 qt. Water
Little Vanilla, Mace and Salt for flavoring and seasoning

Custard No. 2

4 oz. Sugar
3 oz. Flour or Starch
1 oz. Butter
4 oz. Merrell-Soule Powdered Skimmed Milk
2 Eggs
1 qt. Water
Little Vanilla, Mace, Salt for flavoring and seasoning

Method for Making Custard

Sift the dry ingredients into a can or kettle. Break in the eggs and stir with a whip until you have a smooth consistency. Then add water and stir well so that all dry ingredients are dissolved. Strain off, allow any froth on top to settle and dip from the bottom when filling pies.

There are many more ways of varying the ingredients given in the above formula, thereby producing different grades of goods. In connection with this, we have a few pointers accumulated through long experience and the exchange of ideas with users of our milk products, as follows:

Suggestions for Custard Pie Making

Many bakers have trouble with watery custard pie. This is not the fault of the milk powder or any other ingredient, but is caused by baking too long. A custard pie is done as soon as it is firm, no matter what color it may be, and must then be taken from the oven. Merrell-Soule Powdered Milk is better than fresh cow's milk in custard work

because the baker can increase the milk solid content of his mix at will and the dry milk helps to thicken the custard, making the pie sweeter and firmer. We have a formula from a successful user of our product, as follows:

Custard No. 3

If you mix	4 lb. Sugar
Add	1 lb. Lard or Butter in a bowl
Then	2 qt. Egg Yolks
	1 lb. Spring Flour
	2 lb. Merrell-Soule Powdered Skimmed Milk

You will have a regular dough. Now gradually add 10 quarts of water, strain, and next fill your pie bottom in the oven with a dipper. This will make a firm and sweet custard and sets much faster than corn starch custard.

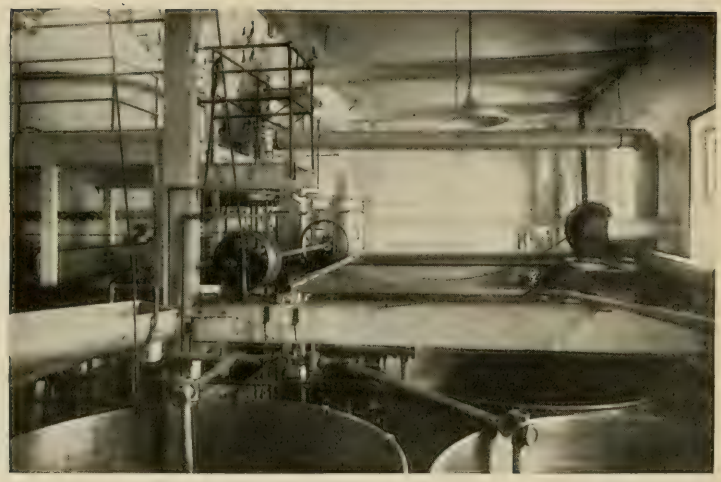
A good idea followed by many bakers is weighing the ingredients required for as many custard pies used in a week or two. For instance, if you make four pies a day, or 24 a week, weigh the required amount of sugar, starch or flour, Powdered Milk, salt and mace, mix and sift together and put away in a can or box, and every time you make a quantity of pies, weigh off the amount required for that number. Mix your eggs and water and stir into the dry ingredients. This saves time in weighing and does away with the guessing of the salt and flavor, which is hard in small mixes. The same is done with pumpkin pies, adding to the whole amount the required spices. This enables you to make uniformly spiced and tasting pumpkin pie, which is probably the most important feature.

Recipes for Soft Pies

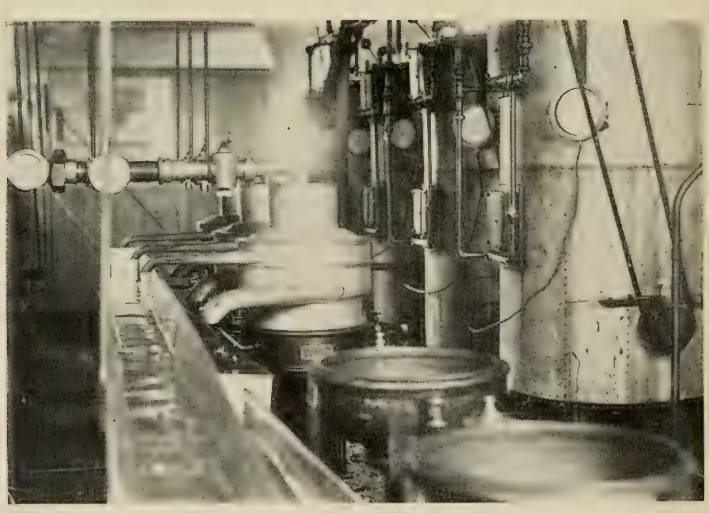
Caramel Custard

For this variety, select any given custard recipe of the foregoing paragraph, substitute "C" sugar or maple sugar for the white granulated sugar of the recipe and color with a little burnt sugar or caramel coloring.

Merrell-Soule Powdered Milk Factory, Arcade, N. Y.
Capacity 200,000 Pounds Milk Daily



Condensary, Arcade, N. Y.



Separators and Pasteurizing Apparatus
Arcade, New York

Cheese Custard

2 Eggs
2 oz. Merrell-Soule Powdered Skimmed Milk
8 oz. Sugar
4 oz. Butter
1 oz. Corn Starch
1 Lemon
1 lb. Cottage Cheese

Cream sugar, butter, corn starch and Powdered Milk until light. Whip eggs and stir them in. Add juice and grated lemon rind. Incorporate cottage or pot cheese, which has previously been run through a sieve, in order to make it smooth. Stir all together and fill into lined pie pans. Scatter on a few small seedless raisins and dust over with cinnamon. Bake same as custard pie, until set.

Chocolate Custard

For this class of goods, select any one of the custard recipes given in the preceding paragraph, but before mixing the water with the dry ingredients, dissolve three ounces of cocoa powder or sweet chocolate, cocoa or chocolate liquor or any preparation suitable for flavoring and giving the custard a chocolate character.

Cocoanut Custard

For cocoanut custard, take any of the custard recipes suited to your business, and before filling crust, sprinkle a quantity of shredded, short-cut or threaded cocoanut into the bottom.

Pumpkin or Squash Pie

6 oz. Sugar
5 oz. Merrell-Soule Powdered Skimmed Milk
1 oz. Black Molasses
3 Eggs
1 qt. Prepared Pumpkin or Squash
2 oz. Flour or Starch
1 qt. Water
Salt

Spices may be varied to suit the taste of your particular trade. Mace and ginger or cinnamon, ginger and grated nutmeg are good combinations.

The easiest way is to mix all the dry ingredients first, stir in the eggs and molasses, then the pumpkin and salt. Mix well and pour in the water. A number of bakers add the water hot, on account, sometimes, of the consistency of the pumpkin, the hot water tending to distribute the pumpkin or squash more evenly. Best results are probably obtained by allowing the mixture to stand a while, stirring it now and then before filling it into the crust.

Sweet Potato Pie No. 1

6 oz. Sugar
4 oz. Merrell-Soule Powdered Skimmed Milk
3 Eggs
1 qt. Cooked Sweet Potatoes finely mashed
1 qt. Water
Salt
Lemon Flavor

Mix and treat the same as pumpkin pie.

Sweet Potato Pie No. 2

Take a good sized sweet potato, peel and grate, line a deep pie pan with pie dough, put in the grated potato and fill with a custard mix, the same as for custard pie, and bake.

Cooked Cream for Pie Filling

Before giving recipes for cream pies, we want to call the particular baker's attention to the fact that pie paste as made ordinarily does not make the best shells or linings for cream pies. With this in view, we give a recipe herewith, that, although it contains other ingredients than the pie paste given in the foregoing paragraph, will not cost any more to produce.

Paste for Cream Pie Shells

3 lb. Flour
8 oz. Fat, Compound, Lard or Butter
10 oz. Sugar
3 Eggs
4 oz. Merrell-Soule Powdered Skimmed Milk
½ oz. Baking Powder
As much cold water as dry ingredients will take
½ oz. Salt, reduce or increase according to amount of salt contained in fat

Rub flour, baking powder, sugar, butter, Powdered Milk, as you would pie paste. Make a hole in center, add egg, water and salt. Work smooth. Roll, cut and line pie tins with this dough. Prick with fork and bake off, before filling with cooked custard, while hot.

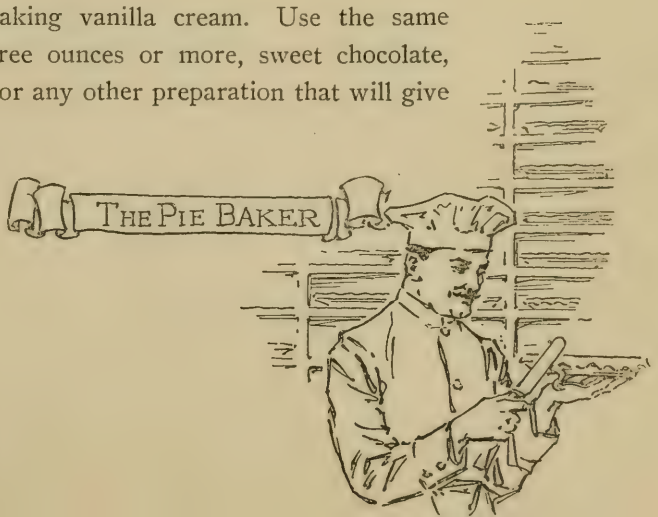
Vanilla Cream

4 Eggs
6 oz. Sugar
4 oz. Powdered Milk
1 oz. Butter
2 oz. Corn Starch
1 qt. Water
Vanilla Flavor

Place Powdered Milk, sugar and water on the fire, stirring well. Beat eggs and corn starch together. Before milk comes to boil, dip out some, and when milk comes to a boil, pour on eggs and starch, stirring. Pour this slowly, stirring rapidly, back into the balance of the milk and sugar until it thickens. Be careful that you do not cook this mixture, because it will curdle your eggs. Add flavor after mixture is off the fire.

Chocolate Cream

Proceed the same as in making vanilla cream. Use the same formula, except add two to three ounces or more, sweet chocolate, cocoa, chocolate or cocoa liquor or any other preparation that will give the chocolate character.



Lemon Cream

3 Eggs
5 oz. Merrell-Soule Powdered Skimmed Milk
8 oz. Sugar
3 Lemons
3 oz. Corn Starch
2½ pt. Water
2 oz. Butter

Grate rinds of two lemons and squeeze the juice of three, place sugar, water and Powdered Milk on the fire, stirring occasionally. Beat eggs and corn starch until smooth, stir in grated lemon rinds and juice. When milk and sugar begins to boil, add the eggs, corn starch and lemon juice as mixed, stirring rapidly. Take off the fire when it thickens and beat in two ounces good butter.

Meringue for Pies

Most cream pies are offered with a meringue top. With this in view we have collected the following recipes:

No. 1

6 oz. Egg Albumen
5 lb. Granulated Sugar
2 qt. Water

Dissolve the albumen in water in a glass or porcelain dish, soaking it a few hours ahead. Add the sugar to the dissolved albumen, pour in kettle, start machine and let run at high speed until it becomes firm. Add your flavor.

No. 2

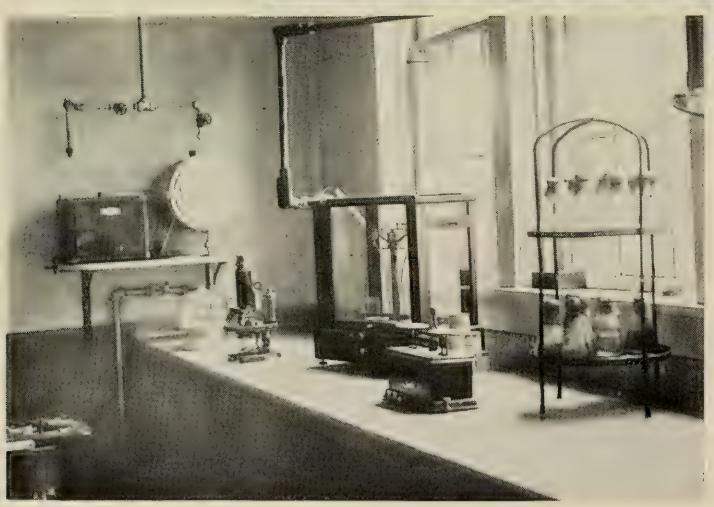
1 pt. Egg Whites
¾ lb. Powdered Sugar
Pinch of Cream Tartar

Beat up the whites until stiff, add pinch of cream of tartar and then gradually beat in the powdered sugar.

General View of Creamery, Waterford, Pa.

Chemical Laboratory, Merrell-Soule Co., Syracuse, N. Y.

Bacteriological Laboratory, Syracuse, N. Y.



Bacteriological Laboratory, Arcade, N. Y.

Simple Tests for the Buyer of Powdered Milk

"POWDERED MILK" and "Dry Milk" are names used to cover a variety of products, differing widely in many important respects.

The name "Merrell-Soule Powdered Milk" stands for qualities which are not possessed by any other Powdered Milk, or "Dry Milk." This is well known to those who have used the Merrell-Soule product, and have also tried other brands.

The inducement to use some other make, rather than Merrell-Soule Powdered Milk, has been, oftentimes, the seeming economy of being able to buy at a slightly lower price. We are confident that we do not overstate when we say that in practically every such instance the result has been, instead of true economy, the exact reverse—that which has been gained in difference of price has been more than offset by a decided difference in those qualities which give to Powdered Milk its real value and efficiency in the bakery, the dairy, the creamery, the ice cream plant, the candy factory, the hotel or the home.

Many of the disappointing and sometimes costly experiences which attend the use of inferior brands of Powdered Milk could be avoided if the buyer would take the trouble to make a few simple tests, which would show him the difference between Powdered Milk which represents the Merrell-Soule standard of manufacture and the products made by other companies where this high standard does not obtain.

The results obtained in the Merrell-Soule factories through steadfast adherence to this standard of excellence are uniform and definite. In this connection, we beg to call attention to an extract, appearing elsewhere in this volume, from Professor O. F. Hunziker's book, "Condensed Milk and Milk Powder." Professor Hunziker, as the preface to his book states, visited Condensed Milk and Powdered Milk factories in this country and in Europe, in order to obtain the material for his work, and its consequent completeness and accuracy have made it an authoritative treatise on the products with which it deals.

Among the qualities to be particularly noted in Merrell-Soule Powdered Milk, and often found lacking in other brands, are:

(1) Freedom from sediment;
(2) Low percentage of moisture;
(3) True milk flavor;
(4) Absence of undesirable bacteria;
(5) Proper percentage of butterfat;
(6) Presence of albumen in natural state.

All these qualities are of the highest importance to the consumer of Powdered Milk, and each may be definitely determined by tests not difficult to make. Apply these tests to Merrell-Soule Powdered Milk, and to any other Powdered Milk, or "Dry Milk," offered in competition, and you will find why it is to your advantage to pay a few cents more per pound, to obtain the Quality for which the name Merrell-Soule stands.

Sediment

The sediment test is perhaps the most simple. Just dissolve the proper quantity of Merrell-Soule Powdered Milk in one glass, any other brand in another glass. Let them stand for an hour, then compare them. You will find that there is a complete solution of Merrell-Soule Powdered Milk, with no sediment. In the other glass—judging from our own tests and those of many customers who have given us their experience—you will find a sediment, varying in quantity, in color, and in amount of objectionable matter contained.

The presence of sediment is always undesirable, whatever its cause. There may be several causes. Some processes of drying milk admit dirt and other foreign matter, which is mixed in with the powder, and appears as dark-colored particles in the sediment. Sometimes there is a reddish or brown sediment, caused by the milk particles having been overheated during the drying process.

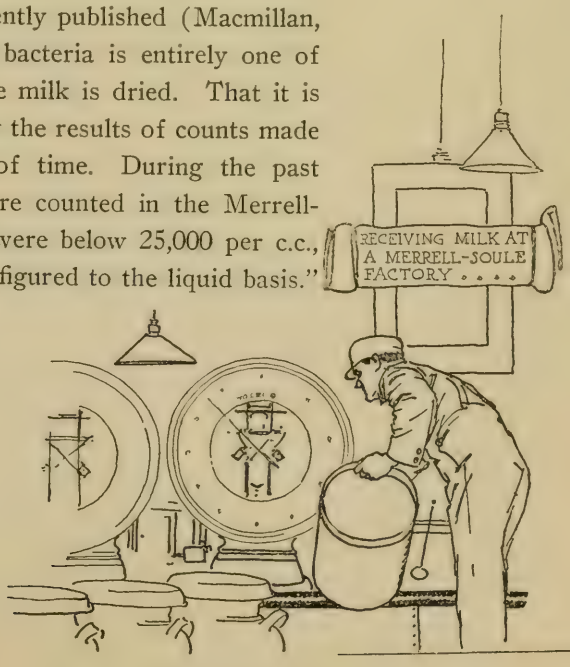
In almost all products other than Merrell-Soule Powdered Milk, there is a sediment of milk solids—sometimes containing undesirable foreign matter and sometimes not—due to the fact that the powder has not been manufactured in such a manner as to dissolve quickly and completely in water. The reason there is no sediment in Merrell-Soule Powdered Milk is, simply and solely, the Merrell-Soule perfected process, by which a powder is manufactured that contains every ingredient of pure, fresh milk, in soluble form, ready to unite perfectly and instantly with water.

Whatever the purpose for which you are using Powdered Milk, you cannot obtain as satisfactory and as efficient results with a powder which dissolves only partially, or which contains foreign matter, as you can with Merrell-Soule Powdered Milk.

Moisture

Testing for moisture is important. The whole secret of keeping Powdered Milk for a long period of time is contained in the one word, Dryness. Just in proportion to the amount of moisture contained in such a product as Powdered Milk will be the growth, in that product, of the bacteria which cause deterioration. Dryness means death to these bacteria, and dryness is one of the strong points of Merrell-Soule Powdered Milk.

In Professor W. A. Stocking's "Manual of Milk Products," a comprehensive and very informative work recently published (Macmillan, 1917), it is stated that "The question of bacteria is entirely one of proper control up to the moment when the milk is dried. That it is possible to exercise this control is shown by the results of counts made on daily samples covering long periods of time. During the past year something like 2,800 dry samples were counted in the Merrell-Soule laboratory. Of these 96 per cent. were below 25,000 per c.c., and had an average of about 2,000 per c.c. figured to the liquid basis."



There are a number of reasons for this remarkably low bacteria count in Merrell-Soule Powdered Milk. First, the fact that constant supervision is exercised by the Merrell-Soule Company over dairy conditions at the farms from which fresh milk is received, insuring the highest degree of cleanliness and sanitation. Second, that the milk is handled under the most sanitary conditions at the Merrell-Soule factories. Third, that it is thoroughly pasteurized. Fourth, the extreme dryness of the powder produced.

It is also noteworthy that bacteria will not propagate in Powdered Milk of the dryness which marks the Merrell-Soule product. On this point Professor Stocking says: "There is rather a tendency for such bacteria as are present to slowly die off."

Merrell-Soule Powdered Milk contains only from two to three per cent. of moisture—a lower percentage, so far as we have been able to learn, than that found in other powdered or "dry" milk products.

The test for moisture is one easily made. It consists simply of drying a quantity of the powder in a wide, shallow weighing bottle, to constant weight. The loss of weight noted, when constant weight has been attained, represents, of course, the moisture which has been removed.

Five hours is generally sufficient for drying. Do not dry longer than this without weighing. It has been noted that a slight increase in weight takes place after long drying, probably from oxidation of some of the constituents. The test should be made, if possible, in a vacuum oven at 95 to 100 degrees Centigrade. In the absence of a vacuum oven, an ordinary water or steam oven having a temperature of from 99 to 100 degrees Centigrade may be used. In this case, about ten hours should be allowed for the drying. The results will generally be a trifle low, but sufficiently accurate for purposes of comparison.

This point of dryness is one which has constant and close attention at the laboratory of the Merrell-Soule Company, in Syracuse. Each day the laboratory receives samples of every lot of Powdered Milk

made at all the Merrell-Soule factories. Moisture tests are made of these samples, to determine whether powder of the requisite dryness is being produced. If not, notice is immediately given to the factory in question, and some condition which should be corrected is looked after at once. If, for instance, a sample shows that powder is being made containing 3 or 3½ per cent. of moisture, the machinery can be adjusted immediately upon receipt of notification, so as to make 2½ per cent. or less.

Flavor

The test for flavor is obvious. Simply mix up one glass of reconstituted Merrell-Soule Powdered Skimmed Milk, or Whole Milk, and another of any competitive product. Smell them both, and decide which has a pure, fresh milk odor. Taste them both, for pure, fresh milk flavor. We know, from experience, in which sample you will recognize and enjoy the unmistakable rich flavor of fresh pasteurized cow's milk.

Bacteria

The test to determine whether Powdered Milk contains undesirable bacteria is one which will require a little longer than any of the foregoing.

Mix up samples of each of the products it is desired to test, and let them stand long enough to sour. The reconstituted milk made from Merrell-Soule Powdered Milk will sour just as cows' milk does, and the sour milk which results may be used for any purpose commonly served by sour milk.

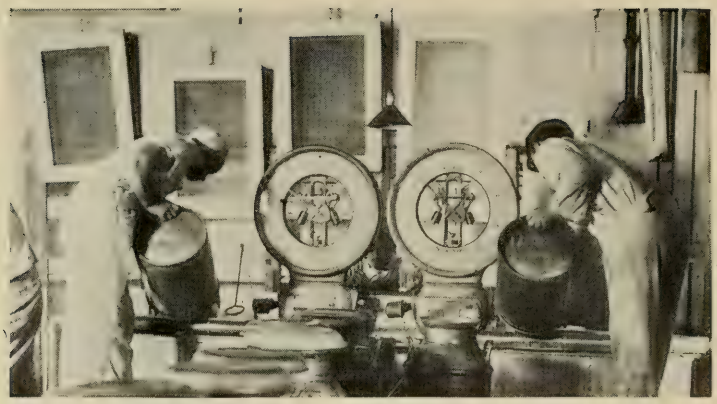
When undesirable bacteria are present, the reconstituted milk will not sour properly, and will be different in odor and flavor from good sour milk. Generally the difference is accentuated by formation in the liquid of a gassy curd, rendering the sour milk unfit for use.

Butterfat

It is, of course, important to know whether the stated or proper percentage of butterfat is contained in any given make of Powdered Milk. There are several methods in use, among them the Babcock method, the Werner-Schmidt method, and extraction by pure ethyl ether of a specific gravity of 0.720. At the Merrell-Soule laboratories the most accurate and satisfactory results are being obtained by a modification of the Babcock method, worked out by N. G. Redmond, of the Merrell-Soule staff of laboratory chemists. In addition to being accurate, this method possesses the added value of being quick, simple and inexpensive. Following is a description of the method by which a determination in duplicate can be made in less than an hour:

Weigh 2.5 grams of Powdered Milk and transfer it to an ordinary Babcock milk bottle, graduated to 10 per cent. A glass funnel (about 2 inches in diameter and with the stem cut off to ½ inch) is inserted in the neck of the bottle and is of great help in transferring the powder. Add 31 c.c. of dilute sulphuric acid (395 c.c. concentrated H_2SO_4 diluted to one liter) and place the bottle upright in a dish of gently boiling water. Shake frequently and keep in the boiling water until all the powder is dissolved and the solution is dark brown in color. This usually takes from 7 to 10 minutes. After removing the bottle from the water add 12 c.c. concentrated H_2SO_4 (sp. gr. 1.82-1.83) and mix thoroughly, taking care to keep the solution out of the neck of the bottle. Agitate with a rotary motion. Place the bottle in a centrifuge and whirl for 4 or 5 minutes. Add hot water until the solution reaches the lower end of the neck, whirl again for one minute, then add hot water until the fat rises. Whirl again for one minute. In order to secure accurate results, the fat column must be read at a temperature not above 140 degrees Fahrenheit. By setting the bottle in water the desired temperature may be reached. Readings should be made to 0.05 on the bottle. The reading multiplied by 7.2 gives the percentage of fat.

Condensary at Gainsville, N. Y. Capacity 30,000 Pounds Daily



Receiving and Weighing Milk at Arcade

Ready for Shipment

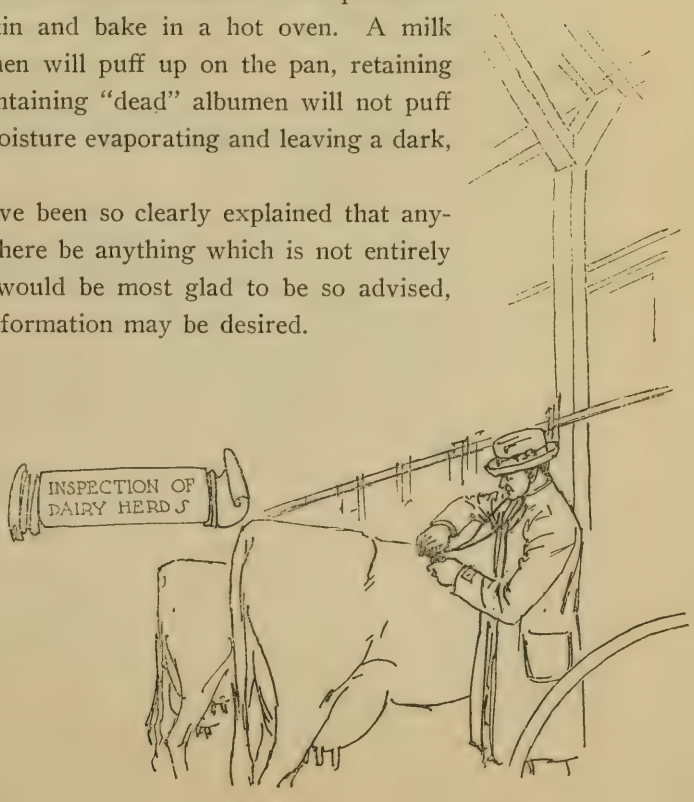
Babcock bottles vary in volume. It is more convenient to use bottles which hold at least 45 c.c. of water when filled to the lower end of the neck. The bottle should be thoroughly cleaned, rinsed with alcohol and dried (to prevent powder sticking in the neck) before using. This insures clear and accurate readings. Commercial sulphuric acid has been used in making the dilute H_2SO_4 solution and good results were obtained. It is better, however, to use chemically pure acid and thus avoid contamination of the fat column by impurities in the acid.

Abumen

One of the important features of the Merrell-Soule process is that it leaves the albumen in the milk in its natural state. There is no heating of the milk particles, at any stage of the process, to a point where the albumen is coagulated. There are various Powdered Milk and "Dry Milk" products in which the albumen has been coagulated—a most undesirable happening, and one seriously affecting the value of the milk powder, whatever may be the use for which it is intended.

There is a very simple test for determining whether a powdered milk contains albumen in its natural state, or whether the albumen has been coagulated by cooking. Just make a thick batter of the powdered milk and water. Place on a tin and bake in a hot oven. A milk powder containing "live" albumen will puff up on the pan, retaining the moisture. Milk powder containing "dead" albumen will not puff up, but lie flat on the pan, the moisture evaporating and leaving a dark, inert mass. (See page 66.)

We trust that these tests have been so clearly explained that anyone may apply them. Should there be anything which is not entirely understood by any reader, we would be most glad to be so advised, and to give whatever further information may be desired.



Comparative Analyses

The following comparative analyses are interesting, as showing the percentage composition of the various Merrell-Soule milk products:

Percentage Composition

	Butterfat	Casein	Albumen	Milk Sugar	Ash (Salts)	Moisture
Merrell-Soule Skimmed Milk Powder	1.35%	29.79%	7.91%	49.94%	8.21%	2.80%
Skimmed Powder Restored 1—9½	.13	2.84	.75	4.76	.73	90.74
Average Skimmed Milk 9% Milk Solids	.12	2.76	.73	4.63	.76	91.00
The above analyses are taken from an average of several thousand tests made in the Merrell-Soule Laboratory.						
Merrell-Soule No. 14 Butterfat Milk Powder	14.20%	25.56%	6.70%	44.41%	7.01%	2.12%
Merrell-Soule No. 14 Restored 1—8½	1.50	2.69	.71	4.68	.73	89.69
Merrell-Soule No. 25 Butterfat Milk Powder	28.20%	21.22%	5.45%	37.88%	5.75%	1.50%
Merrell-Soule No. 25 Butterfat Milk Powder Restored 1—7	3.52	2.65	.68	4.74	.72	87.69
Whole Milk (3.5%)	3.50	2.60	.66	4.63	.70	87.91
Condensed Milk—25.52% Total Milk Solids—7.82% Butterfat	7.82	5.53	1.47	9.30	1.40	74.48
Merrell-Soule No. 25 Restored 1—3	7.05	5.30	1.36	9.47	1.44	75.38
Merrell-Soule No. 50 Butterfat Milk Powder	50.40%	15.17%	4.02%	25.45%	4.16%	.80%
Same restored in water 1—5	8.40	2.53	.67	4.24	.69	83.47
Merrell-Soule No. 65 Butterfat Milk Powder	65.15%	10.60%	2.82%	17.86%	2.91%	.66%
Merrell-Soule No. 65 Milk Powder Restored (1—3⅓)	15.12	2.44	.65	4.12	.67	77.00
Merrell-Soule No. 72 Cream Powder	71.15%	8.79%	2.33%	14.74%	2.43%	.56%
Merrell-Soule No. 72 Cream Powder Restored 1—2.9	18.25	2.25	.55	3.76	.62	74.57
18% Average Cream	18.00	2.25	.61	3.81	.62	74.71
20% Cream	20.00%	2.21%	.59%	3.75%	.61%	72.84%
22% Cream	22.00	2.13	.57	3.57	.59	71.14
30% Cream	30.00	1.94	.51	3.24	.53	63.78

Federal Standards

Following are the Federal Standards for Dried Milk and Dried Skimmed Milk:

Dried Milk is the product resulting from the removal of water from milk, and contains, all tolerances being allowed for, not less than twenty-six per cent. (26.0%) of milk fat, and not more than five per cent (5.0%) of moisture.

Dried Skimmed Milk is the product resulting from the removal of water from skimmed milk and contains, all tolerances being allowed for, not more than five per cent. (5.0%) of moisture.

Bakers' Brick Mince Meat

MERRELL-SOULE Bakers' Brick Condensed Mince Meat is especially put up for bakers' use in five-pound bricks. The bricks are packed six to the case. Each brick is wrapped in paraffin paper and encased in a tight carton. The end of the carton opens easily and the paraffin paper folds back, so that any amount required can be cut off, and the remainder neatly rewrapped and boxed. There is no waste, no muss, no loss of time.

The baker who uses the Merrell-Soule Bakers' Brick Mince Meat may be sure that he has an extremely high quality product—a perfect blend of spices, beef, salt, suet, apples, raisins, lemon and orange peel, bound with cane sugar, vinegar and pure boiled cider. All these ingredients are of best quality and are thoroughly cleansed, by a process which removes all foreign matter, before they go to the mixing machine. Merrell-Soule Bakers' Brick is the most economical, clean and wholesome form of mince meat to use in the making of mince pies, producing a fine, well-flavored pie that has been a trade builder for a multitude of bakers, and is today one of the most popular pie ingredients on the market.

Confectioners' Mince

Merrell-Soule Confectioners' Mince is a blend of all the ingredients used in Bakers' Brick Mince Meat, with the exception of the beef, suet and spices. It is an ideal product for use by bakers and confectioners, for any purpose where fruit is required.

Confectioners' Mince, like the Bakers' Brick, is put in five-pound bricks, six to a case, each brick wrapped in paraffin paper.

How Bakers' Brick Mince Meat Is Made

In the manufacture of Bakers' Brick Mince Meat, the ingredients used are chopped beef, apples, raisins, cane sugar, lemon and orange peel, salt, spices, suet, vinegar and pure boiled cider.

All are of the best quality obtainable, and are thoroughly cleansed by processes which remove all foreign matter, before they go to the mixing machines. And every part of the factory—floor, walls, every piece of machinery—is kept spotlessly clean and sanitary.

The opening room is the first point of interest to a visitor who makes a tour of the Merrell-Soule factory. Here are cases of frozen beef, bags of dried apples, barrels of sugar and 50-pound boxes of raisins. The raisins come from California, where most of the raisins of the United States are grown. The boxes are opened, the raisins conveyed to another floor, where they are thoroughly washed and stemmed. Next they are sorted, then sent to picking tables, where girls pick out stems and defective raisins which have escaped the machines.

After they have thus been thoroughly picked, the raisins go to a steamer, which softens them for the seeding. When seeded, they are ready to be put into the mince meat. The raisin seeds—of which 400 to 500 pounds a day are extracted—are ground, and sold as food for live stock, being valuable for their fat, sugar and protein content.

The dried apples, taken from the bags, are dropped into a washer which cleans them thoroughly. From the washer they go to a drying box, where excess moisture is removed. As they come out of the drier on a carrier, they are sorted by girls who remove skins, cores and defective apples. They are then sent down a chute to bins in the grinding room.

The beef, which comes to the opening room in a frozen state, is sliced thin by machinery. It is sliced for two reasons—first, that it will require less time for cooking than would chunks, and, second, that the juice will not be cooked out of it. After being cooked, it is quickly cooled by currents of air.

The sugar is put through a grinding machine, which breaks up all lumps, then weighed into exact quantities, for mixing.

The first mixing operation takes place in what is known as the grinding room. Here the apples, beef, dried orange and lemon peel,

and salt, are carefully weighed out and dropped into a large hopper, from which the mixture is fed into large worm-driven grinders. These are similar in operation to the meat grinders in common household use. The ingredients pass through two of these grinders in succession. The ground product is then dumped into metal, tin-lined containers and carried by an automatic conveyor to the mixing room. Meanwhile, the sugar is also being conveyed to this room.

In the mixing room the containers, filled alternately with sugar and with the ground beef, apples, salt and peel, automatically dump into the mixers. These are large bowl-like affairs, in which powerful arms revolve through the material to be mixed. While this is going on, the spices and seeded raisins are mixed in. When the mixing is nearly completed, boiled cider and vinegar are sprayed in. After they have been thoroughly assimilated, the product is ready to be packed.

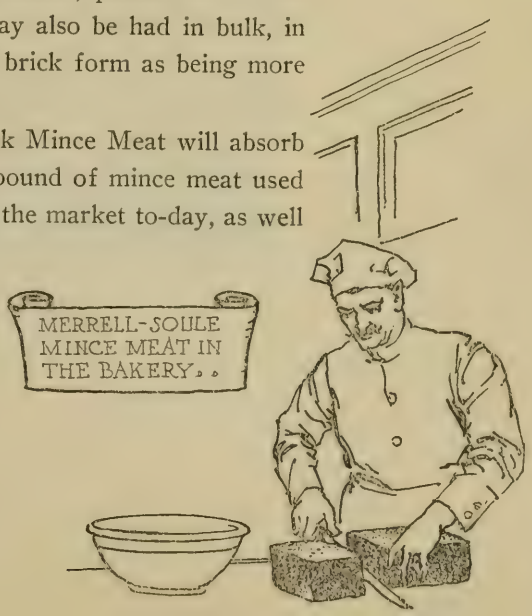
The mixing machines are on the floor above the press, and directly over it. It is therefore an easy matter to tip the bowl part of the mixer over, allowing the mince meat to slide down an enclosed chute to the press.

Use of Bakers' Brick Mince Meat in the Bakery

Many bakers have proved by years of continuous use that Merrell-Soule Bakers' Brick Condensed Mince Meat is in every respect the most satisfactory mince meat they can obtain.

Nearly all bakers prefer the five-pound bricks, packed six to the case, though this Condensed Mince Meat may also be had in bulk, in 50 or 100-pound kegs. We recommend the brick form as being more convenient, cleanly and economical.

The fact that Merrell-Soule Bakers' Brick Mince Meat will absorb one quart of water (two pounds) for each pound of mince meat used makes it the most economical mince meat on the market to-day, as well as the highest quality.



For those who make a point of special and individual features in their goods, Merrell-Soule Bakers' Brick Mince Meat offers an ideal base, to which special ingredients may be added.

Following is a recipe for Mince Pie Filling which we have found to give uniformly excellent results:

Use one quart of water for each pound of Merrell-Soule Condensed Mince Meat. Break up the mince meat, pour hot water over it, boil five or ten minutes, allow it to cool before using. It is best to prepare this the same as all other pie fillings a day ahead. When ready for use any other special ingredients may be added for your individual trade.

(For Pie Crust, and Pie Fillings other than Mince, see Pages 48-56.)

Plum Pudding

Large Mix

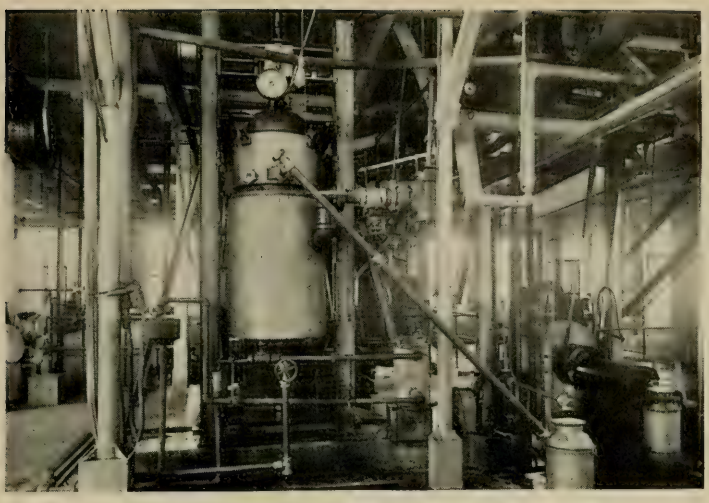
50 lb. Merrell-Soule Bakers Brick Mince Meat
6 Oranges
16 Lemons
6 qt. Chopped Apples
1 qt. Egg Yolk
1 qt. Molasses
1 qt. Condensed Apple Cider
2 lb. Merrell-Soule Powdered Skimmed Milk or Buttermilk
1 lb. Cinnamon
2 oz. Cloves
2 oz. Ginger
2 oz. Allspice
¼ lb. Salt
1 oz. Baking Soda (If buttermilk is used, increase to 2 oz.)

Method: Grind up fine the oranges, lemons and apples through meat chopper, mix all the ingredients well and add the following:

10 lb. Sultana Raisins
10 lb. Cake Crumbs
2 lb. Bread Crumbs which have been soaked in milk
4 lb. Bread Flour

Mix again well, then fill in greased pudding tins, dusted with cake crumbs and cover up tight.

Steam from three to four hours, according to size of puddings.



Merrell-Soule Continuous Condenser
Waterford, Pa.

Pasteurizing Apparatus, Merrell-Soule Factory
Waterford, Pa.

Merrell-Soule Factory, Waterford, Pa. Daily Capacity 60,000 Pounds of Milk

Plum Pudding No. 2

Small Mix

8 lb. Merrell-Soule Bakers Brick Mince Meat
1 lb. Small Seedless Raisins
½ lb. Cracker Meal
3 Lemons—Rind and Juice
1 pt. Condensed Apple Cider
6 Eggs
1 oz. Salt
2 oz. Cinnamon
½ oz. Cloves
½ oz. Ginger
1 pt. Water in which has been dissolved 3 oz. Merrell-Soule Powdered Skimmed Milk
½ oz. Soda

Mix as foregoing formula.

Steamed English Fruit Pudding

1½ lb. Merrell-Soule Confectioners Mince
½ lb. Small Seedless Raisins
5 oz. Butter
4 Eggs
2 oz. Merrell-Soule Powdered Skimmed Milk
½ pt. Water
¾ lb. Flour
½ oz. Baking Powder
Little Cinnamon and Lemon Juice

Mix well, fill in moulds and steam for about an hour.

Confectioners' Mince in the Bakery

Merrell-Soule's Confectioners' Mince, which may be termed a Fruit Paste, is a ready-to-use fruit mixture, evenly proportioned, and is offered to the baker as a well-balanced fruit filler, an ideal ingredient for producing an excellent fruit cookie, coffee ring filler, or layer cake center. It may be used as the main ingredient in making the finest grade of fruit cake, and quality holiday and wedding goods.

A baker does not need to change his recipe for any of the baked products mentioned above, except that he recalculates the fruit and sugar ingredients of any mix containing fruit.

For example:

Old Mix, Black Fruit Cake

4 lb. Butter and Lard
5 lb. Sugar
30 Eggs
1 pt. Molasses
1 pt. Water, in which is dissolved
2 oz. Merrell-Soule Powdered Skimmed Milk
6½ lb. Flour
1 oz. Baking Powder
10 lb. Seeded Raisins
3 lb. Seedless Raisins
2 lb. Citron
Spices

Method: Rub sugar and butter, add eggs slowly in small quantities, sift in baking powder and flour, pour in molasses, milk and spices, mix, and then incorporate fruit, which has been dusted with a little flour. Bake in a very slow oven, in paper lined pans, timed according to size of the cake, figuring not less than an hour for the smallest cake.

Readjusted to use Merrell-Soule Confectioners' Mince as the fruit ingredient, this recipe is recalculated as follows:

20 lb. Merrell-Soule Confectioners' Mince
4 lb. Butter and Lard
30 Eggs
½ pt. Molasses
2 oz. Merrell-Soule Powdered Skimmed Milk dissolved in
1 pt. Water
6½ lb. Flour and Cereal according to FFB. 20%
1 oz. Baking Powder
Spices

The method is simplified as follows:

Rub butter, Confectioners' Mince and spices, add eggs slowly in small quantities, sift on flour and baking powder, pour on molasses and milk dissolved together, and mix. Lay out and bake the same as foregoing example.

Comparison

Comparison of the two recipes shows that although the weights of the finished products will be the same, the comparative volume obtained

will be greater in the recipe in which the Confectioners' Mince is used, as it replaces 5 pounds of sugar, which cannot show as great a volume in the finished baked goods as the Confectioners' Mince. Besides this advantage, there is the saving of labor accomplished by the use of Confectioners' Mince. It takes a good deal of time and work to prepare 15 pounds of fruit for fruit cake, weigh it, dust it with flour and, especially, to cut the citron, lemon or orange peel.

Also, the cost of production is not increased. Twenty pounds of confectioners' mince does not cost any more than the five pounds of cane sugar, 10 lbs. of muscat raisins, 3 lbs. of seedless raisins and 2 lbs. of citron, which formed the ingredients of the old recipe. There is also the important consideration of the extra cubic volume of baked goods obtainable, which because it is not sucrose, does not melt and is not lost in the process of baking.

This example clearly points out the merits and possibilities of Confectioners' Mince.

Suggestions for the use of Confectioners' Mince will be found in the following recipes:

Coffee Cake Fillings

For Coffee Rings, also tarts and other filled goods
5 lb. Merrell-Soule Confectioners' Mince
½ lb. Chopped Nuts
5 pt. Water
2 lb. Cake Crumbs
Spices optional

Method: Break up Confectioners' Mince in water, bring to a boil. Allow to cool and mix in nuts and cake crumbs. It is then ready for use.

Fruit Filling No. 2

This is high class fruit ingredient as a filler in better grade goods.

½ lb. Almond Paste
5 lb. Confectioners' Mince
½ lb. Chopped Nuts
1 lb. Cake Crumbs

Method: Mix almond paste, mince and nuts with hot milk to the consistency of a paste. When cold, add cake crumbs to any thickness desired.

Layer Cake Filling

Heat 3 pounds Merrell-Soule Confectioners' Mince and mix into a quantity of fondant or marshmallow, or combine with a cooked cream. This makes an excellent and tasty filler, much appreciated by the public and is cheaper than chocolate or many other fillers, such as jelly or jam, commonly used in this grade of goods.

Fruit Layer or Spiced Fruit Mix

Spice and Salt optional
5 lb. Confectioners' Mince
1¾ lb. Butter and Lard
1 qt. Eggs
4 oz. Merrell-Soule Powdered Skimmed Milk dissolved in
1 qt. Water
4 oz. Baking Powder
4 lb. Flour and Cereals according to FFB 20% substitute

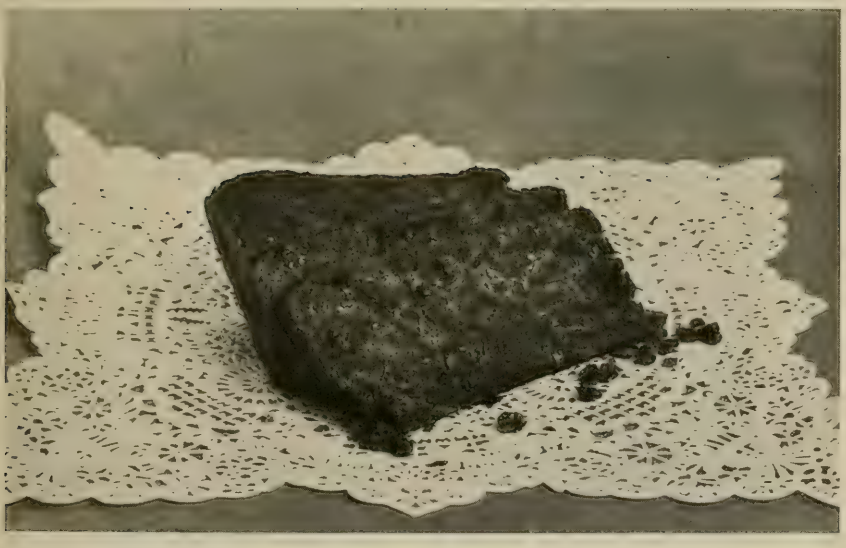
Method: Mix as usual. Start by rubbing Confectioners' Mince with fat.

Fruit Bars or Slices

5 lb. Confectioners' Mince
5 lb. Flour and Cereals
4 lb. Cake Crumbs
2 lb. Lard
1½ pt. Eggs or Yolks
1 pt. Water, in which is dissolved
2 oz. Merrell-Soule Skimmed Milk Powder
1 pt. Lt. Molasses
2 oz. Cinnamon
2 oz. Soda
Salt

Method: Rub lard, Confectioners' Mince and soda, add eggs slowly, cinnamon and molasses, then the cake crumbs, then milk, then flour, cereals and salt. Mix thoroughly, weigh out in one pound pieces, roll out in long strips, put three on a pan, flatten a little and

Fruit Layer or Spice Fruit, Iced



Black Fruit Cake

(See page 70)

Spice Cakes and Fruit Biscuits

wash with egg wash. Bake in a medium hot oven and cut in bars. Broken nuts may be added to this mixture.

Fruit cookies and fruit slices can be made from the same mix. For making fruit cookies, roll out the dough ½ inch thick, cut out round and place them close together on bench. When they are all cut out, brush off the dusting flour and wash over with egg wash. Don't get them too wet. Make a dent in the center of each with finger and put in a dot of fruit filling No. 2 as described on page 71. Bake in medium oven.

Fruit Cookies No. 2

5 lb. Confectioners' Mince
3½ lb. Butter
10 Eggs
5 oz. Merrell-Soule Skimmed Milk Powder
dissolved in
2½ pt. Water
10 lb. Flour and Cereal
2½ oz. Powdered Ammonia
(More or less according to strength)
Spices and Salt optional

Method: Mix the same as sugar cookies. Start by rubbing Confectioners' Mince with fat.

Fruit Biscuits

5 lb. Flour
1 lb. Butter
2½ lb. Merrell-Soule Confectioners' Mince
6 oz. Sugar
10 Eggs
3 oz. Merrell-Soule Milk Powder
dissolved in
1¼ pt. Water
1 oz. Soda
2 oz. Cream of Tartar

Sieve flour and cream of tartar together on a bench. Rub sugar, Confectioners' Mince, butter and a pinch of salt, whip eggs and stir in sugar, butter and mince, sift on flour, make a bay, pour in soda and milk powder dissolved in the water and mixed together. Lay out the same as tea biscuit, wash top with milk or egg, when baked ice with vanilla icing, leave plain, or dust with powdered sugar.

These recipes are typical of what can be made with Confectioners' Mince, but bakers themselves will readily find many uses for it instead of the fruit and sugar that they have been using. The fact that this material is very convenient and handy in the shop also makes it attractive to bakers and confectioners.

At Your Service

In the foregoing pages we have attempted to set forth, as clearly and fully as possible, the nature, uses and advantages of the food products we manufacture. We feel sure that every consumer of these products, indeed everyone concerned in the distribution or use of them, will find in this volume much that is of interest and of value.

If there is anything not fully understood, or if there is some subject upon which any user of our products would like further information and explanation, we shall be glad to hear from him. We will write fully in answer to his inquiry, or we will be glad to place at his disposal one of our service representatives—experts, whose business it is to visit the baker, the ice cream maker, the confectioner, or any consumer of Merrell-Soule products who may desire a personal demonstration of the best methods of use.

Also, each day brings to light new uses for Merrell-Soule Powdered Milk products, and new advantages which attend their use. Therefore we cannot hope to include, in this book, all that Merrell-Soule Powdered Milk must eventually mean to the industries with which we have dealt, nor all the fields of activity into which it will some day enter. This is a story which is writing itself, chapter by chapter, and day by day.

We can only say that as these fore-shadowed developments in the uses of our products go beyond the contents of this volume, we shall hope to keep all our friends fully advised through other avenues of contact which will always be open.

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